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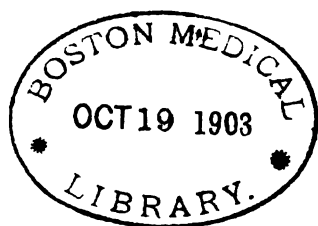
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VOL. XXIII

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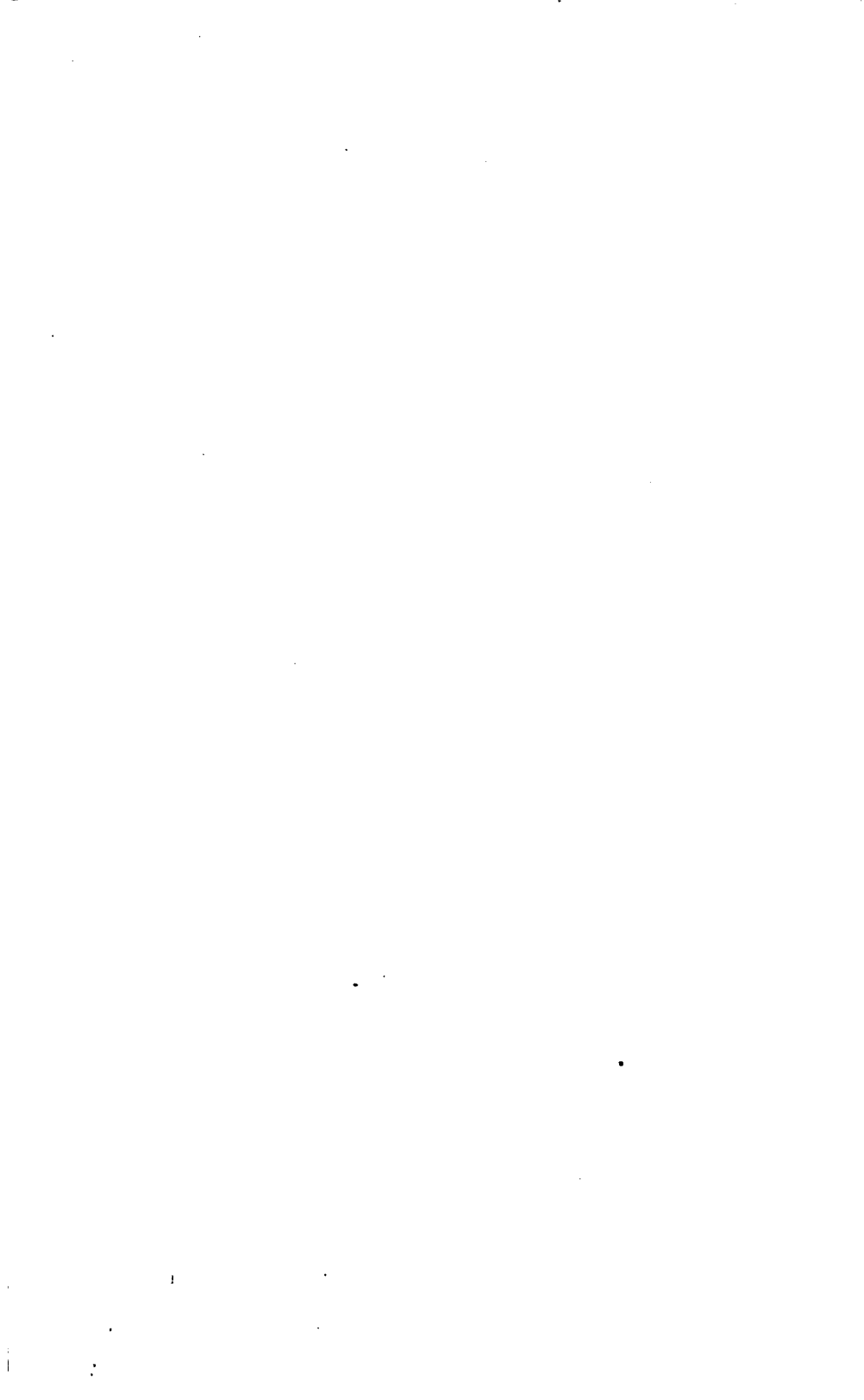
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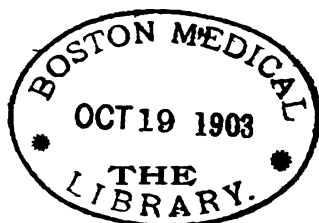
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Original Communications.¹

FAULTY ENVIRONMENT.²

BY E. K. WEDELSTADT, ST. PAUL, MINN.

MR. PRESIDENT AND GENTLEMEN,—As the choice of a topic was left to me, I felt that some good might result if I tried to interest you in faulty environment,—i.e., the leaving of opportunities that breed disease in teeth we fill or in surrounding parts.

It is out of the question to go over this whole field in a single essay. I have written two other essays on this topic, but in none are the same cases cited. The conditions, however, are similar in all the cases.

To fix this subject firmly in our minds, let me speak of a case from practice. Mrs. A. came to me for the purpose of having her teeth examined. She informed me that for ten years she had been immune to caries. Her age was about forty-five. There were thirty-two teeth in her mouth, thirteen of which contained nineteen fillings. All the fillings had been made with gold, save a cavity in the occlusal surface of a lower right third molar, which

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the American Academy of Dental Science, Boston, October 2, 1901.

contained an amalgam filling. There was a considerable amount of calculus on the lingual surfaces of the ten lower teeth: more calculus on the upper teeth on the left side than on the upper teeth on the right. Looking for the cause, I found a faulty interproximal space between the upper left bicuspid, and another between the second bicuspid and molar. The mesial surface of the upper left first molar had been Arthurized. The mesial surface contained a gold filling, 3.2 millimeters in diameter, and it had been made in a round hole. The gum in the vicinity of the bicuspid and molar was of a purplish color, and the amount of tissue involved can be better imagined if I say that it covered a space equal to a dime cut in halves. I called the woman's attention to the spaces and the color of the gum, and compared these with the conditions existing on the right side. I told her I was quite certain that at present little use could be made of the teeth on the left side; but if an alteration were made in the conditions, I felt it would lead to much more comfort. She answered that she was entirely satisfied with the conditions as they were, and that about all her mastication was done on the left side of her mouth. She had no trouble with the food crowding into the spaces. After some talk, however, she reluctantly consented to have the necessary work made. The second bicuspid was moved into its normal position and then the mesial surface of the molar filled, thus restoring it to its original mesio-distal diameter. This work took some time; and when all was completed, I requested that a report be given me in about two weeks. In three weeks or so the woman returned and said, "When I told you that I did all my chewing on the left side and that the food did not annoy me, I misinformed you. For a number of years I have not made any use of the teeth on that side. The food would crowd into these spaces, and it annoyed me to such an extent that I was driven nearly frantic. But since this tooth has been filled I have had comfort, and it is a pleasure for me to eat on that side." Now here was a typical case of faulty environment, and one, except the misrepresentation by the patient, of a very common variety. For a few moments let me try to interest you in this particular case, and then I can touch on other conditions.

In Arthurizing the mesial surface of the upper left first molar, the cutting had been sufficient to remove the enamel from the entire mesial surface, or from the gingival margin to the occlusal

surface. It was 7.25 millimetres from the lingual to the buccal enamel margin. Thus there was that extent of dentine exposed to the action of the micro-organisms. There was a shoulder left at the gingival margin, for contact, I suppose. When the tooth was ready for work, the rubber dam was adjusted, the gold filling dislodged, and then the disintegrated dentine removed until sound tissue was reached. This sound tissue had for its lingual and buccal cavity margins the enamel as originally left, and the gingival cavity margin was in the cementum. The anchorage was placed in the central pit, making an occlusal anchorage which was at right angles with the cavity proper.

We know definitely several things:

First. That wherever teeth are Arthurized and the enamel removed from a proximal surface, it is but a question of time before the dentine disintegrates.

Secondly. That wherever the teeth in the arch are normally situated, any operation we may make in their proximal surfaces which does not return the parts to their normal condition results in faulty environment; therefore, faulty environment I should define as any abnormal condition which brings contiguous parts into improper relations.

Thirdly. With the development of our knowledge, we become certain that faulty environment breeds disease. With our knowledge of conditions developed to this extent, will somebody have the kindness to tell me why it is that some men in our profession still call attention to the beautiful results that follow the application of the Arthur method? Within fifteen months I heard a man advocate the use of this method. He alleged that he had patients whose teeth had remained in first-class condition for thirty or forty years after being Arthurized. I cannot believe that the teeth of those who live in the East are any different from the teeth of those who live in the West; but I do believe that the teeth of all individuals under the same conditions and environment suffer about the same.

In all operations which are made in the proximal surfaces of teeth,—I am speaking now of teeth that are normally situated,—it is essential that we restore the teeth to their original mesio-distal diameter, so that the interproximal space can be restored to its original size. Space in which to work must be obtained so that we can restore the parts to their original size. How this

space is obtained makes little difference, so that the means used do not inflict needless injury to the gum septum. (I trust that it is not necessary for me to refer to the barbarous method so long in vogue, of driving wooden wedges for the purpose of obtaining immediate separation. That method has long since been given up by the more intelligent class in our profession.) Obtain space so that all operations on the proximal surfaces of teeth can be made properly. If you cannot obtain space, then do not do the work. Remember that surgeons will not perform deliberate operations when constitutional conditions are unfit. Neither should we make any operations unless the conditions are such that lasting benefit will result to the patient. I am well aware that space in which to work is not obtained by many operators; but that is no excuse for our not obtaining it. We would wish our own teeth filled properly, so let us fill the teeth of our patients just the same as we would wish our own filled. I see a great many fillings which have been made by men in different sections of this land, and I am often amazed at the conditions that confront me. When I say to you that more failures can be charged directly to the leaving of faulty environment in filling teeth than to any other one cause, I feel certain I merely echo the sentiments of many intelligent men who are doing all possible to interest dentists in doing away with these faulty conditions. Let me speak of some of these conditions. I find an almost general disregard of the necessity for

- (1) The application of the extension for prevention method;
- (2) A proper contour for the interproximal space;
- (3) Trimming properly all metal fillings, and
- (4) Placing contact points on fillings or crowns.

I could name a number of other conditions, but these are more than enough for us to consider. Why, let me ask you, is there such failure in giving attention to these different things? But this is not the time or place for me to do otherwise than consider very briefly the four conditions which have just been named.

1. The necessity for the application of the extension for prevention methods. The *Items of Interest* for May, 1901, and the *Review* for August, 1901, contain my views regarding this subject. I have no desire to alter them; and, further, I do not wish to take up your time in arguing for a teaching which, I feel, should be followed by all dentists who have at heart the welfare

of those whom they serve, and who are willing to study the conditions which lead to failure. I shall close my remarks on this topic by asking those who do not believe in this teaching to make an experiment, which will quickly set at rest any doubts which they may have regarding the necessity for applying this method. Let an unbeliever, when working for a patient he can keep track of, and in whose mouth new cavities of decay are occurring, take four cavities that are in the proximal surfaces of bicuspid or molars. Let him apply the extension for prevention method to two cavities, and not apply it to the other cavities. Within five years the results that will follow will make him a believer in this theory, for at the end of this time recurrence of decay will generally be found in the two cases last mentioned, due wholly to faulty environment. (I am not speaking of isolated teeth, but of those which have adjoining teeth in position.) When an operator has made a number of such experiments, and has become familiar with the results that follow, he is in a position to speak authoritatively regarding the necessity of following certain well-known and definite methods to which many are now calling attention. I am most desirous of emphasizing the importance of this subject, to the end that more men will take an interest in it, and obtain more definite knowledge regarding the necessity for studying the conditions which lead to the failure of so many fillings in the proximal surfaces of teeth. There is no need of so many of these failures. Many people lose confidence in our ability. There should be a general effort made to eradicate this evil and to further improve the fair name and fame of American dentists.

2. The necessity of a proper contour for the interproximal space. I do not know how to consider this topic very briefly, but let me cite two cases for your consideration. Both operations were made by well-known professors of operative dentistry in our colleges. One case was a gold filling in the mesio-incisal surface of an upper left central incisor. No fault could be found with the cavity preparation. When the filling was finished, I was requested to inspect it; I was not asked to criticise. I found a beautifully finished filling, imperfect, however, in contour. The mesio-distal diameter of the tooth had been reduced about one-fifth. If a small broach had been placed mesio-distally in the space, about one-third the length of the tooth towards the gingival from the incisal surface, we would have had an almost per-

fect capital letter A. Now this operation was made for a woman who, every time she spoke, showed, let me in all charity say, the work of an ignorant man. Later, I shall consider this case further.

The other operation was a very large gold filling in the disto-occlusal surface of an upper right first molar. What a beautiful operation it was, in so far as finish and cavity preparation were concerned! The lingual and the buccal enamel margins were extended just far enough, but the gingival margin of the filling was covered with an unhealthy gum septum. Every part of the operation was carried through with a degree of faithfulness that is seldom seen. But the man had no space in which to work. The tooth was not restored to its original size, nor was the interproximal space restored. And the contact point,—well, he had placed it in the middle third of the filling.

Let us take these two cases and examine the conditions. Here we have the two extremes of faulty environment. One case is as bad as the other, and leads to equally injurious results. Food crowds into these spaces; it is held there; it undergoes decomposition, and it keeps the mouth in an unhygienic condition. This leads to functional disarrangement through the loss of the use of the teeth. It is our duty to correct these evil conditions, returning the parts to as nearly a normal condition as lies in our power. It is not often accomplished without hard and unremitting toil. Still, we should meet these conditions fairly and aim to do away with them entirely. I should like to say more to you about this subject, but you are intelligent men, and the plans for doing this work have been well presented for some time past.

3. The necessity for trimming properly all metal fillings.

Of all the work which we are called upon to do, I know of none that so tries my patience as that of properly trimming the proximal surface of fillings. It does not make any difference how perfect all the work has been made up to this point; it is useless if that proximal surface is not perfectly trimmed. If we leave overhanging margins, yeast-ditches (Searl), little grooves and hollows in the filling or around it, then we are leaving opportunities for fermentation to undo our work. There is no other part of the operation that is so little understood by dentists generally. If I am to judge from the condition of the fillings which come to me from other practitioners, I am compelled to say that

there are too many men who seem to believe that all that is necessary to do is to *fill* the teeth of their patients. It does seem that a little more attention should be given this subject. I am opposed to this habit of leaving so many fillings unfinished. A most serious condition of affairs confronts us, and it is one, too, that results in much more harm than many seem to suppose.

Regarding this matter of trimming fillings, let me say that there are other things besides disks and strips for trimming the proximal surfaces of fillings. I should like to call your attention to some of the other things. Here is a Black saw, some Black files and knives. These instruments are used for trimming the filling to form on the proximal surface. The saw is used for removing the surplus gold which lies along the gingival margin. I use it in this way: after the completion of the marginal condensation I loosen the saw from the frame and shove one end through the interproximal space. It is then replaced in the frame, and this nut on the end turned until the saw is rigid. The saw is then gently insinuated under the overhanging filling-material, and, cutting towards the occlusal, the surplus is removed. I do not use the saw more than once. I make an attempt to remove about the gingival fifth of the surplus. I do not continue the use of the saw until there is an opening into the interproximal space from the occlusal surface. These files follow the use of the saw, and the knives are used after the files. The filling-material on the proximal surface is usually completely trimmed with these instruments. When the trimming is completed, strips and disks are used to remove the file-marks and to prepare the filling for the final polish. It is permissible to use rotary disks, provided that they are used to the lingual and to the buccal of the contact point. But if there is an adjoining tooth in position, they should never be passed into the interproximal space from the occlusal surface. If this is done, the contact point on the filling is removed, and another must be made if the filling is to leave our hands in the best condition possible. I have absolutely no patience with those writers on dental topics who assert that they can and do trim and finish all fillings made in the proximal surfaces of teeth by using the rotary disks alone. I have seen many fillings that have been made by some men who have made this assertion, and the less said about their fillings the better for us all. If we will but bear in mind that there are instruments for us to use

when fillings are to be trimmed, and polishing strips for polishing fillings, and use them for the purpose for which they are intended, we shall very quickly observe how much more rapidly we can do our work. Nor is this all. The improvement in shaping our fillings will be so great that we may wonder why it was that we did not make use of these instruments at an earlier period.

4. The necessity for placing contact points on fillings and crowns.

I have spoken of the necessity for obtaining space where operations were to be made in the proximal surfaces of teeth, and I have dwelt on its importance. Without space in which to finish fillings, the interproximal space is not restored to its normal condition, nor is the mesio-distal diameter of the tooth returned to its normal size. We must have space to properly contour and finish all fillings made in proximal surfaces. If we have not space in which to do these things, how is it possible for us to make a contact point on a filling or crown? And if a tooth cannot be properly restored, then, I say, do not do the work.

Large contact points and those placed in the middle or gingival third of the proximal surface lead to irritation and the absorption of the gum in the interproximal space, and all three of these conditions are simply opportunities which breed disease. Those who have somewhat different ideas regarding this subject are requested to study with care the faceted contact points worn on the mesial and distal surfaces of many teeth. Obtain a selection of extracted teeth and examine the condition of the proximal surfaces. You may be surprised at some of the things which will be revealed to you. The teeth and their arrangement in the arch must be studied if we wish to fully understand what constitutes a normal proximal surface. Thereafter, if in making repairs we return the proximal surfaces to as near a normal condition as possible, we shall have done our whole duty, provided that all the other work has been made as thoroughly. It is impossible for me to emphasize too much the necessity for studying carefully the conditions with which we deal, so that we may be in a position to return any part to its normal condition when corrective measures are necessary.

I have touched upon these different subjects very briefly, and I can only ask that some effort be made by all to obtain some comprehensive knowledge of these different things by a com-

parison of the normal with the abnormal conditions. This comparison will very quickly prove how necessary it is to make all contact points as small as possible, and to have them placed properly on all fillings and crowns.

As it is, this essay is too long, and I must close without saying one-quarter of what I feel is necessary about the different things I have asked you to consider.

I have simply emphasized the importance of our considering with a little more care a few teachings, and have given you the benefit of my ideas. I should like very much to have the benefit of your ideas, for with an exchange of thoughts much is learned; otherwise, nothing is gained.

AN UNUSUAL OPERATION.

BY W. R. HOWARD, D.D.S., NEWPORT, R. I.

THE opportunity presented itself to perform an operation, the occasion for which is rare, but which may be of interest.

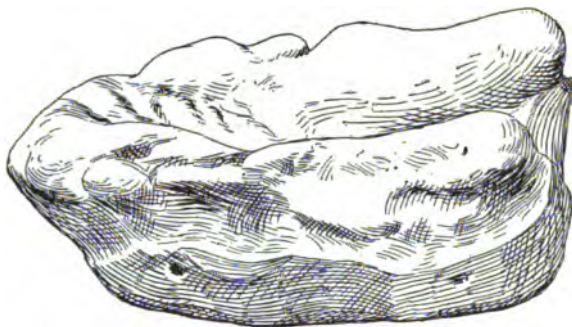
Last September a woman called at my office for treatment. Her teeth were in extremely bad condition, and there was obviously but one course to pursue,—viz., extraction and insertion of artificial teeth. From the remains of her denture, it was easy to judge what an unprepossessing appearance her teeth presented at their best,—the teeth being very small, with spaces of at least a quarter of an inch between the anterior ones. Consequently, it was but natural that she should be anxious to have the dentist improve on nature.

I extracted the teeth, and told her to return in six months. She came according to instructions. I took the impression, and started to make the upper denture, but on inserting the trial plate I found it absolutely impossible to obtain any effect that could be tolerated, on account of the protuberance of the alveolus in the anterior portion of the mouth. I think any one can get an idea of the impossibility of the case by a glance at Model No. 1.

What to do I was at a loss to know; but it occurred to me that it ought to be possible and practicable to remove quite a portion of the alveolar process. I searched through reference books for a precedent, but could find none. I then consulted Dr. Brackett (Professor of Pathology at Harvard Dental School) and Dr. Dar-

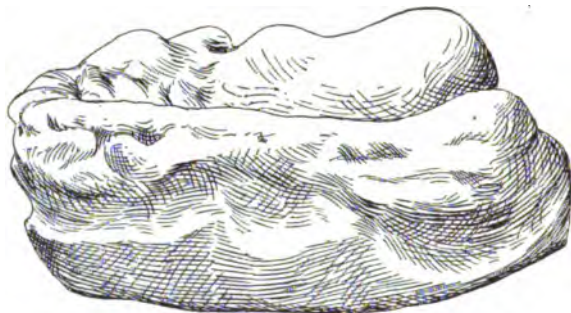
rah, a local surgeon of ability, and we decided that there could be no objection to the course I suggested; accordingly, we decided to carry it out.

MODEL NO. 1.



The operation was done at the patient's home. She was laid on a long table and ether administered; then with a surgeon's knife I made a clean incision from cuspid to cuspid on a line with the natural position of the teeth clear through to the bone. Then with

MODEL NO. 2.



a periosteal elevator I pushed back the gum and periosteum, completely exposing the alveolar process for some distance both lingually and labially. With a pair of alveolar forceps I made an incision through the alveolus at the median line from a quarter- to a half-inch in depth, and with that as a starting-point, using surgeon's bone-clippers, removed the alveolus to about the same depth to each of the cuspids. At Dr. Brackett's suggestion, I had the dental engine at hand, with a variety of mounted carborundum stones, and found it but a few moments' work to grind smooth any roughness which remained after using the bone-clippers, and which

would have very much retarded the process of healing. The gum was then replaced and trimmed, allowing a sufficient amount for shrinkage, and four sutures of catgut made to hold it in place.

I saw the patient the following day, and she seemed to be progressing favorably, with very little soreness of the gums. I told her to return when it seemed to be thoroughly healed and free from tenderness, and, to my surprise, she was back in just two weeks from the day of the operation. I proceeded to make an artificial denture without any gum in front, and succeeded very much to her satisfaction as well as my own.

Model No. 2 shows the mouth after operating, though the actual case ought to be seen to realize the great change that was made in her appearance.

HELPS TO SUCCESS IN PRACTICE.¹

BY GEORGE L. PARMELE, M.D., D.M.D., '70, HARTFORD, CONN.

AT first thought it would hardly seem possible that genealogical information could have been one of the first things to help us in dentistry, or rather to help me into dentistry. But it did. In the days which some of you remember, you veterans of '69 and '70, when the Medical Museum was at the east end of the second story of this old Medical School building, it was the custom at examination-time for the various professors to seat themselves at little tables, arranged around this large room. On the opposite side of the table was a chair for the victim. At a signal given at regular intervals,—every ten minutes, if I remember correctly,—each candidate would move promptly to the next table on the right, like a progressive whist party. In swinging round the circle that day, I came in opposition to Professor Oliver Wendell Holmes, to be roasted upon his anatomical gridiron. Dr. Holmes opened the battle by asking my name, which I answered correctly. "How do you spell your name?" "P-A-R-M-E-L-E." Two correct answers. Dr. Holmes then said, "I had an acquaintance, a fine old gentleman in New York, a dentist, named Eleazar Parmly, but he spelled his name P-a-r-m-l-y." I explained with as much circumlocution as possible the various spellings of the name, and stated that, in spite of this variation, the family in America were all descended from

¹ Read before the Harvard Dental Alumni Association, June 24, 1901.

John Parmelin, one of the original founders, in 1669, of Guilford, Conn. He then inquired in what way I was related to Dr. Eleazar Parmly.

Whereupon I had the pleasure of informing him that my great-great-grandfather was brother to the great-great-grandfather of Dr. Eleazar Parmly. Now all this genealogical chat occupied time and reduced the anatomical questions to the minimum. Thus did genealogical lore prove useful in my dental experience.

Your secretary has been punching me up for the past two years to read a paper before you, and I have managed to evade him, but this year, in spite of protests, he insisted that, inasmuch as thirty years had passed over my head since I graduated, I ought at least to come and show myself, and let some of my old comrades know that I was still upon earth, and this, I assure you, is about all I am going to do.

I will not detain you long (ten minutes, he said, would be enough; yes, more than enough, you say). Neither am I going to offer apologies for the crudity of my remarks, scratched off at the eleventh hour, in the hurry of pressing affairs, out of as well as in my office. In an adjoining room, among those of my classmates, appears my photograph, and, although I give you my class year, 1870, I defy any of you to pick it out. I assure you, however, that I thought I knew a vast amount more then than I do now. I hardly feel that I have attained enough success to write upon the subject assigned me by your secretary, therefore I have taken the liberty to change the title, so that it reads, "Helps to Success in Practice." It is not my purpose to present a series of mechanical devices or a list of favorite remedies that have helped me, but rather to touch lightly upon one or two points that strike me as aids to success, after one has laid the foundation by earning a diploma from this school.

I offer, not so much the things that have helped me, but rather some things I consider essential to every practitioner. I believe that it would be by far the wiser course for all those entering upon a professional career if they would after graduation serve as assistants with some successful practitioner. There they would gain experience, not only in the manipulation necessary to the care of the dental organs, but learn—what is vastly more important to them at the outset—how to deal with people, and to meet the many petty, but important details of daily routine in a successful office.

"The every-day cares and duties which men call drudgery are the weights and counterpoises of the clock of time, giving the pendulum a true vibration, and its hands a regular motion."

"Of all work that produces result, nine-tenths must be drudgery. There is no work, from the highest to the lowest, which can be done well by any man unwilling to make that sacrifice."

"The public judge us by what we appear to be and by what we have already accomplished. We judge ourselves by what we feel capable of doing." "The talent of success is nothing more than doing what you can do well, and doing well whatever you can do without a thought of fame."

It is the attention to petty details that tells the story of success or failure. Many have failed through the want of appreciation of their importance. A tooth is a little thing, a bundle of cells, yet upon its preservation rest the health and beauty of the individual.

Many patients are so alert and nervous that it is difficult to eradicate the impression that they are to be hurt, and they submit to our manipulations with the firm conviction that they will be hurt; but my experience is that kindly, encouraging talk and gentle handling will gain their confidence and allay their dread to such an extent that we can go on with our operations with no trouble whatever. So true is this in the care of children, that our first efforts should be entirely devoted to subduing their fear and gaining their confidence before attempting to accomplish anything else. From that time on they are yours to command.

The saving of teeth is an important matter, and we, as well as our patients, know that teeth cannot be saved without considerable discomfort; but we should remember that we are working upon living, human beings, and we should hardly be justified, after such manipulations in reporting, as surgeons sometimes do, that "the operation was a success, but the patient died." It is our duty during operations for nervous patients to give them all the encouragement that we can, not by soft, insipid speech or by patting their cheeks, or hanging over them as though they were sick pets, as some dentists have been known to do, but by gentleness of manner and speech convincing them that, although we shall operate with firm and steady hand, we will inflict no unnecessary pain. Each movement should accomplish its definite object, and no uncertain scratching around should be indulged in.

Some of the essentials to success that I will enumerate are:

Cleanliness in all things, in your person, in your surroundings, your linen, and appliances. Not only be clean, but, if possible, let the patient realize it.

Be gentle. Cultivate at all times gentleness of touch and bearing in the handling of your patients, but at the same time be confident and firm.

Endeavor to reduce all the pain and discomforts of the dental chair to the minimum.

Be thorough in examinations, and hold a consultation, so to speak, with your patients, instructing them as to the importance of what you propose doing for their comfort.

Be cheerful, and have your surroundings cheerful.

Be sympathetic, but not aggressively so. Try by kindly suggestions to put them at ease, and convince them of your unwillingness to inflict unnecessary pain.

Provide yourself with short entertaining stories; keep yourself informed upon current events, the latest literature, theatrical events, advances in the arts and sciences, so that at all times you can, after learning what interests your patients, keep their minds off of themselves by occasional chats on the subjects. And, withal, cultivate in yourself the importance of the attention to every little detail that can enhance your patient's comfort. It is of as much importance to know when *not* to do a thing as to know how to do it. To succeed, it is of as much importance to know how to handle your people as to handle instruments.

It has been forcibly impressed upon me of late that the average dentist—mind you, I am not speaking of present company—is apt to be a narrow-minded individual, or, as a friend expressed it not long since, “there are more blamed fools among dentists than among any class of men I deal with.” Now why, if true, is that so? One of our famous writers has said, “In great cities we learn to look the world in the face. We shake hands with stern realities. We see ourselves in others. We become acquainted with the motley many-sided life of man.” This is true in most walks in life: the merchant, the business-man of every calling, and most professional men go out among their fellow-men; their angularities get worn down; they become polished and made liberal by this contact. The world seems broader to them. They think of things other than their calling. How is it with many dentists? Daily from morn to dewy eve they confine themselves in a small room in contact principally

with nervous women and children. They talk shop in their office and out of their office; and if at the start they were broad and liberal, can we wonder that the rut they are in tends to make them narrow and bigoted? Dentistry is a useful, honorable calling, but the world does not revolve around it as such men seem to think.

Let us avoid, then, getting into this rut. Let us mix with the world more, and become interested in things outside our dental world, and let us avoid too much talk of shop.

The specialist should know everything of his specialty, and he should know something of all things, even though not immediately therewith connected. He should be a student, and above all things keep pace with his own science, but should inform himself as to all sciences and the world in general.

So must the dentist's life be a continuation of his student life until he gives up the practice of his profession. The improvements in our art, the daily advances in dental science, are now so rapid that whenever any dental specialist ceases to be a student he falls behind, and is not capable of doing that full justice to his patrons which they have a right to expect. No matter what the defect or deformity he is called upon to treat, if he cannot give it the best and most perfect treatment known at the time, he has failed in his duty.

Friends, my purpose in appearing here to-day has been to meet you, to greet you all, to renew my acquaintance with many, to become acquainted with more. These notes for a paper were simply a pretext of your secretary and myself to get me to this reunion, and I am glad we have succeeded. Take these notes as they are offered. We should know each other better, and I trust we may be spared to meet time and time again.

"FOREIGN OBSERVATIONS."¹

BY FREDERICK BRADLEY, D.M.D., NEWPORT, R. I.

MR. PRESIDENT AND GENTLEMEN,—I came near being disappointed in being able to present anything to you to-day. I was especially fearful of this when I was on the good steamship *Kaiser Wilhelm* and the custom officials came around. It was a question

¹ Read before the Harvard Dental Alumni Association, June 24, 1901.

whether I should be able to bring anything except myself. In fact, so closely are the passengers questioned, that it is related of one lady who was returning with a small baby of some two months old, it was a question as to whether she would be allowed to land without paying duty, as the officer was not sure but that it was an importation. It is also a fact that my daughter was questioned when she appeared on the wharf with some little knick-knacks which she had to prove she had bought in New York.

As a result of my observations in Europe and England, I have come to three or four conclusions:

1. The American dentist in Europe is a most agreeable person to meet, as I have met him; and I may say, also, the native dentist of each country was courteous and desirous of making my stay in his city or town agreeable as well as profitable and interesting. The gentlemen whom I met I made a practice of asking them the condition of the profession in the various places, also as to the treatment of the poor, the care of the teeth of the poor children, as well as to the education of the student, and will refer to it again later.

All the Americans, with one or two exceptions, whom I had the pleasure of meeting, seemed to have developed a large and lucrative practice. Their rooms were large, well, if not luxuriously, furnished, especially on the continent, and every indication of success was plainly written; yet with it all they were distinctly American in sentiment and feeling. Every one looked forward to that future, and thought of their positions as an end to be accomplished, as a means towards the end. They all probably look forward to educating their children in America. They want them to be American citizens and not citizens of France or Germany. They look to America as their homes.

2. The laity in every country cordially conceded the palm of superiority to the American dentist; everybody, high or low, who has ever sought the services of a dentist, intimating his purpose to put himself only in their hands. By that I do not mean to say that they go regularly as they should, for they have not yet been educated up to that position where they will go regularly to the dentist,—they now go only when driven there. A great many patients after a recent treatment, if the tooth feels comfortable, will not go until it has given them considerable trouble. But they do not like to pay for broken engagements. Of course there are den-

tists—natives of every country—who are successful; many of them have, however, been educated in the States professionally, and no doubt they make the most of that fact, as their patients seem to feel that it is a reason sufficient to rest in. I do not doubt that the large majority of the cultured, intelligent, and wealthy people of every country consider themselves as patients in the care of an American dentist or one educated in America.

We find, however, that there is an inclination on the part of some of the foreign dentists to treat us as we treat foreign labor. They are somewhat afraid of them, for fear that they may perhaps take away their trade or business; and the native dentist seems to feel in that way in regard to an American dentist settling there. Sometimes it is very uncomfortable to feel that you are regarded in this way, but the moment it was found out that I was there merely on a visit, in Paris especially, I was introduced to a number of dentists and treated with the utmost courtesy. They could not do enough in the way of introducing me when they knew I was not going to settle there. For instance, in Naples and in Milan, the native dentist seemed to be a little bit shy about making the acquaintance of the American dentist, but all this disappeared when I said I should never think of coming there to enter into practice. Then they expressed themselves as being highly pleased to meet me; but I think they showed a little envy of the success of the American dentist. This brings me to my next conclusion.

3. That the dentist who is educated in Europe—what might be termed the native European—is to a certain extent and in a certain way jealous of or envious of his American *confrère*. This feeling is difficult to define or to explain, but I am confident many Americans have realized the presence of this feeling, and will agree with my statement. This brings me to my next conclusion.

4. That the trend of recent legislation in Europe is to add to the difficulties in the way of the American dentist securing a license to practise, or a position in the profession. I was unable to find any place where a diploma granted by a dental school in the States would be accepted by the authorities and a license to practise granted.

Of course, we in this country have to go before the State Board; but it seems to me that a diploma which is granted by a reputable school ought to indicate at least that they are in a position to take the examination, but on the European continent and in Great

Britain there seems to be no such an intention. This is far from the facts of the case. They require seven years' study, and depend on the time which is given to it. One must be in the hospital so many years, and in this and in that so many years. It is very difficult to get this license, and the laws seem to make it more difficult, in fact, to make it as difficult as possible. Besides, their examinations are not upon dental subjects, but upon surgery and medicine, and really upon almost everything but dentistry. Of course, a diploma does not secure a license in this country, but it is supposed that the necessary examination will cover only the studies taken up in the average dental school; in Europe, on the continent, especially marked attention is given to strictly medical and surgical questions, matters which of themselves do not fit a man any better for his work. Of course such broad culture is desirable as a liberal education is desirable; and if such legislation had been enacted solely for the purpose of raising the professional standard, we should be the last to complain, assistants or otherwise.

I will speak further of what I would suggest if you are thinking of going abroad. Within a short period it has been the custom for a reputable dentist who had a license from the country to take as an assistant an American dentist without any examination whatever, and it would in that way not be necessary for him to have a license. Now, every assistant must pass an examination before he can go with any one else to do anything except some laboratory work.

Now, a few words as to the educational institutions which I have visited. There are a number of schools devoted to dentistry, some of which I visited. In Berlin, Dr. Miller is an enthusiastic worker as the head of the school there, making the most of their facilities, operative dentistry being carried on in a number of small rooms, with chairs crowded together, imperfect light, and I should judge rather limited oversight or instruction, yet the students are much in earnest, and no doubt they will accomplish something. Dr. Miller is planning for and expecting a new building in the near future, and a part of his work in visiting this country is to examine buildings and facilities which may be of service in Berlin. Dr. Miller was particularly kind and courteous to me when I was in Berlin.

Dr. Miller is about to visit the States this summer. He will be here next month probably, visiting us in Boston, and he is looking forward to receiving many suggestions from us in the putting up of the new building in Berlin. I told him what we were doing, and

I hope that some of us will have the pleasure of hearing him. He is a very busy man, and I have come to the conclusion that the very busy man is the man who accomplishes the most in this world. I found that Dr. Miller was not so busy but that he could give me a few minutes, and I found him remarkably solicitous to do what he could to make my short visit in Berlin as interesting as possible.

In Paris I visited a school in charge of Dr. Godon, the Dean. They had a large operating-room lighted from the ceiling but not from the walls, and this gave every chair in the room an equal opportunity as regards the light; each student had an equal chance of the light, and they were working very earnestly there. In this school I saw an extensive collection of models and appliances showing loss of tissue from various diseases or other causes, and the means taken to restore the parts lost, and some of the appliances used were very ingeniously arranged. Everything seems to have been done in a hurry, and they are not careful enough in making examinations. In London I saw a student, without any apparent oversight, very busy making a large filling for an inferior cuspid tooth, and he had gotten pretty far along. I noticed that there was very little space between the teeth, and I asked him how he would treat the mesial surface of the first bicuspid, which had a small cavity in it. He did not seem to realize the necessity of filling that, and he was covering it up. He called the instructor's attention to it, and he decided that on the whole it was better to fill it.

In London I visited the National Dental School, but was unable to see the Dean. The young gentleman in charge assured me there was nothing in London superior to this school. I found afterwards, too late to visit it, the Leicester Square School had just put up a fine new building; in fact, it is not yet finished. I did not get an opportunity to visit this school, because I left Europe, on my return, the next morning after I had heard of it, and I was greatly disappointed in not being able to do so. In all the schools I visited, marked attention was given to anæsthetics and extraction, and there are always free patients. They average eighty-five per day in extracting, and I do not know how many in filling teeth. One instructor boasted of the large number of extractions daily. All the schools find patients for the free clinics, as they are called, just as we do. In many large cities there is no dental school or infirmary, but the poor have the services of a visiting dentist or his assistant at the surgical department of the city or town hospital. For in-

stance, in many places I was unable to find any institution for infirmary work, and yet the poor can visit the regular hospital, and there will be some visiting dentist to perform extractions, but do nothing in the way of filling teeth. In such places as Naples and other large cities I found that some of the laboratory assistants in the American dental offices had started a little dispensary for the purpose of practising upon the poor, and they had worked up a little practice among these people by this cleaning and filling for practice.

My observation would lead me to think that the teeth of the poorer classes in Italy were above the average in quality, and in Great Britain, especially in the manufacturing districts, the same classes seemed to have utterly neglected their teeth so far as regards cleaning or preserving them is concerned. As I have just said, the poor people of Italy have as good teeth as any people I saw, and among the manufacturing people of England have the very worst, and they are the most careless of any people I saw.

It is generally conceded that the more refined classes are becoming interested in the salvation of their own teeth; but there yet remains much to be done to fully convince even those of the necessity of regular and frequent attention at the hands of the dentist. There is an abundance of work to be done; there is great need of competent men, but there is no place for any one who cannot pass the required examination, and such men as cannot comply with this requirement have a very hard and disagreeable time and bitter experience.

What shall be done? I would suggest to the Executive Committee that they find out the exact requirements in each country, what is required for a man to practise, and particularly to get a copy of the law. I tried to get some copies myself, but could not; and then, when any of our men wish to go abroad to practise, we can tell them what is probably expected of them, and they can fit themselves to pass the required examination, and the rest will be easy for them, I think.

A FEW EXTRACTS FROM "FOX AND HARRIS" IN CONTRAST.¹

BY HENRY C. SPENCER, D.M.D., '97, NEWTON, MASS.

IN the few minutes which are allotted to me, I wish to read to you a few promiscuous extracts from one of the first text-books published in the interest of the dental profession, believing that it will have some interest especially to the younger members of the profession who have, perhaps, found difficulty in keeping up with the dental literature even of the present day. It would be interesting to know the limitations of the profession of the future. It is interesting to know the difficulties under which the practitioners labored in the past, that we may better appreciate the advantages which we of the present day possess, and which advantages we must strive to increase in order that the dental profession shall be one of constant progression. When we think of the practitioners of the early part of the last century, we are sometimes apt to liken them to the traditional blacksmith, and as possessing about the same delicacy of touch as he would be likely to possess. We are apt to think of them as being unprofessional and unrefined; and yet the dental literature of that period was as strong in the true professional spirit as it is to-day, as will be evident from the following from one of the first text-books published in the interest of the profession in 1840.

"The treatment of the diseases of the teeth, and the replacement of their loss with artificial substitutes, do not comprise all the duties of the surgeon-dentist. The treatment of the various affections of the gums, alveolar process, and their contiguous parts, as well as the management of second dentition when affected in a faulty and improper manner, and the correction of the irregularity in the arrangement of these organs, all come legitimately within his province. He, therefore, who would be a successful practitioner, should not only be skilled in the various mechanical manipulations which belong to it, but he should also have a knowledge of anatomy, physiology, pathology, and the therapeutical indications of disease generally. Without this knowledge no one should take upon himself the responsibility of practising the profession, and to obtain it requires much time and close and persevering application. Neither

¹ Read before the Harvard Dental Alumni Association, June 24, 1901.

mechanical ability nor the highest medical attainments, nor both combined, without a thorough knowledge of the diseases of the dental apparatus and their treatment, can make a successful practitioner of this branch of the healing art.

"That any one, therefore, should be guilty of the folly of committing the treatment of diseases of organs so valuable as the teeth to any individual totally destitute of all qualifications, and having no other claim to skill in their management than the mere assumption of the name of dentist, is almost incredible. Such inconsistency might seem paradoxical, if it were not constantly observed in individuals moving in the most learned and polished walks of society and manifesting in most matters great prudence, shrewdness, and judgment. But this is not so culpable in others when medical men, eminent for erudition and skill in their profession, have been known to employ and recommend men of this description. Thus encouraged, they have multiplied with astonishing rapidity; and if it were not that some men of education, talent, and ingenuity are engaged in this field of practice, they would long before now have destroyed all confidence in the alleviatory resources of this profession. But, thanks to the efforts and unwearied labor of such men, notwithstanding the increase of empirics, the progress of the science and art of dental surgery has been rapid. It has outstripped the most ardent flights of imagination, and has already attained a degree of excellence which a few years ago was supposed impossible."

It will thus be seen that the most reputable practitioners in the early part of the last century, although possessed of what we would now consider a very limited knowledge of dentistry, were nevertheless keenly alive to the advantages to be gained by the most thorough knowledge then attainable, and were extremely jealous of those who practised without the best education to be obtained at that period.

Up to within fifty years ago extracting was the principal method of relieving a troublesome tooth; and this sometimes leads us to believe that the early practitioners were not aware of the importance of retaining the natural conditions as they should be, especially in regard to the temporary teeth. Yet from Fox and Harris, published as early as 1840, I take the following:

"Sound teeth are as desirable and just as necessary to the comfort and health of a child as they are to an adult, and, therefore, they should not be permitted from neglect to decay, and the tem-

porary teeth require as much care as do the permanent ones, and they should never be extracted except for the relief of pain,—that cannot be removed by any other means,—or the cure of an abscess, or to make room for a permanent tooth. The popular opinion that, inasmuch as these teeth are to be replaced with others, it is of little importance whether they remain in the mouth until they are removed by nature to make room for their successors or are lost a year or two earlier is erroneous, and has been productive of much injury."

So it seems that while the practitioner of this early period held the same views in regard to keeping the teeth as nearly as possible as nature intended, as we do to-day, others seem hard to understand when viewed from this age of progression; but when we realize they had no knowledge of bacteriology, which has revolutionized so many theories in the past few years, some of their views are not to be wondered at.

Fox and Harris, for instance, in speaking of caries, say, "Caries, or, as it is commonly called, decay, is the disease with which the teeth are most frequently affected. At first it has its origin in the bony part of the crown of the tooth, the structure of which is gradually destroyed, and the disease proceeds until the whole crown of the tooth, both the enamel and the bone, is entirely removed. The enamel, though *less* frequently, is nevertheless sometimes first attacked. On the mastication of hard substances, pieces of the enamel are broken off on account of the texture of the bony part being destroyed by the caries which had previously gone on internally. If a sound tooth that has been recently extracted be broken, the membrane will be found to be firmly attached to the bone of the tooth forming the inner cavity. But when this membrane becomes inflamed, it separates from the bone, and the death of the tooth is the consequence.

"That this is the proximate cause of caries appears to be highly probable, by remarking that a caries of other bones is caused by a separation of those membranes which cover them and which are attached to them. Thus a separation of the periosteum will cause a death of part of the tibia or that part of the pericranium, a caries of some part of the bones of the head. This opinion is also confirmed by comparing the symptoms which accompany inflammation in a bone with those which are occasionally felt by persons in their teeth previous to any appearance of caries. When the inflam-

matory symptoms subside, the pain in the teeth goes off; but as inflammation may have caused the death of some part of one or more teeth, the decomposition of the internal part of the tooth goes on until the enamel is broken away and caries is discovered. I could mention many cases in corroboration of this statement, and produce several examples of teeth with the decay extending through the internal part while the enamel remained perfectly sound.

“That teeth acquire a disposition to decay through some want of healthy action during their formation seems to be proved by the common observation that they become decayed in pairs. That is, those teeth which are formed at the same time, being in a similar state of imperfection, have not the power to resist the causes of disease, and, therefore, nearly about the same period they exhibit signs of decay, while those teeth which have been formed at another time, when a more healthy action has existed, have remained perfectly sound to the end of life.

“TREATMENT OF CARIES.

“When the decay is situated on that side of a tooth which is in opposition to another, so that persons say the decay is between two teeth, it is always difficult, and frequently impossible, to retain the stopping, in which case great inconveniences arise from the food lodging in those cavities, whence it is not easily removed. Great benefit will here be derived from passing a file between the teeth, in which operation the opening should be so much enlarged as to allow a quill tooth-pick to be used with ease.

“When the decay has considerably advanced, a small round or half-round file may be used; and it should be carried into the mouth in an oblique direction, so as to preserve as much as possible of the front part of the tooth. If the tooth is very sensitive, file a little at a time until the decay has been nearly or quite eradicated, recommending, during the intervals, the application of spirits of wine to the decayed parts, which tends to harden the caries substance of the tooth and to diminish its sensibility. To many the sensation produced by the action of the file on the teeth is exceedingly disagreeable, and to some quite painful; but the operation should never be suspended on this account.”

“AMALGAM.

“The most objectionable and damaging article that has ever been employed for filling a tooth is an amalgam of mercury and

silver known by the various names of *lithodeon*, *mineral cement*, etc. This preparation not only really oxidizes, but also turns the teeth black, and causes them to decay more rapidly than if let alone. It moreover exerts a hurtful influence upon the *alveolo-dental periosteal* tissue, gums, and, in fact, the whole body. A number of marked cases of salivation produced by the use of this amalgam have fallen under the observation of the editor. Yet it has been most extravagantly eulogized by a few unscrupulous empirics during the last six or seven years, and thousands of teeth in Europe and America have been destroyed by it.

“TOOTHACHE, AND TO DESTROY NERVE.

“Attempts have been sometimes made to destroy the nerve with the actual cautery by introducing a red-hot wire; but I have scarcely ever found this plan to be effectual, and, as it always gives great pain, and sometimes produces an increase of inflammation, I think it better never to recommend it. Indeed, all applications to stop toothache are uncertain, and if relief be not at once obtained it is better to extract. It was ascertained by Mr. Spooner, of Montreal, that the nerve of a tooth might always be destroyed in a few hours by the application of a small quantity of AS_2O_3 . At first the discovery proved to be of great value; but though it was ascertained that the nerve could with certainty be destroyed by it, and the tooth afterwards plugged, alveolar abscess was almost sure to result. The use of it has therefore been almost altogether abandoned by the more skilful and experienced of the profession.”

(Preferred raising in socket, or in case of anterior teeth to extract, fill, and replace.)

CROWNING.

Files, etc., about same as now. Then the nerve was destroyed by passing a small iron or steel wire, heated until it was white, suddenly up the canal. The destruction of the nerve in this manner is exceedingly painful, several applications being sometimes necessary, and in some cases producing alarming consequences; but, notwithstanding, is recommended by many of the most reputable practitioners. Since the employment of AS_2O_3 for the destruction of nerves in teeth, it has been used to some extent for this purpose; but it is objectionable in that it not only destroys the whole of the lining membrane of the tooth, but it also induces an unhealthy action in the investing membrane, which generally in the course of

a few months terminates in alveolar abscess, thereby rendering the root unfit for the support of a crown as well as obnoxious to the surrounding parts. It is important, therefore, that as much of the vitality of the root as possible should be preserved. The author recommends as the *best* method of destroying the nerve to take a small iron or silver wire with the point brought to an edge and left rough. The manner of performing the operation is to introduce the instrument into the canal about one-half or five-eighths of an inch, giving it at the same time a quick rotary motion, which will extirpate the nerve as far up as the broach extended, leaving the remaining portion and lining membrane to supply the inner walls of the fang with vitality and nutriment, which they will oftentimes do for years. The patient should be instructed beforehand that the operation will be attended with considerable pain, but that it will be of but a *few seconds' duration*.

THE CONTROL OF OUR PATIENTS.¹

BY HENRY A. KELLEY, D.M.D., '88, PORTLAND, ME.

WHEN I received an invitation to assist on Alumni Day, my thoughts naturally turned to the last time I appeared before you. This was in 1898, and I was one of six asked to discuss for five minutes, "The Present Status of Cataphoresis." Your committee in its invitation this year ask me to present something which will lead to a discussion, and for that reason I would like to make this paper a continuation of my former paper. For in the first place that will suggest to you cataphoresis, that in 1898 we all thought of so highly; and I would like to hear an expression from you as to how many are now using that method and with what results, and if you have discarded it, why you did so.

Another reason for making this a sequel to my former paper. As I was one of so many to consider the same subject, it pleased me to view the question in a way that I hoped would not be a repetition of the ideas of the other men. Therefore I took as my text the two questions, "How far had we progressed towards painless dentistry

¹ Read before the Harvard Dental Alumni Association, June 24, 1901.

when cataphoresis, as now practised, was presented to us?" and "How much farther has cataphoresis carried us?" I hardly flatter myself that those of you who heard that paper will remember what I said, but I assure you that it impressed me as a very incomplete paper. I can only say, in defence of it, that five minutes is a very short time in which to present any subject. So, with your permission, I will continue that paper to-day, taking up the side I then omitted. I may also say that a paper read by Professor Warner, of Springfield, before the Northeastern Dental Association last year, has been a great help to me in my endeavor to understand myself and express my thoughts to you; and I shall thus make use of some of his paper in my presentation of this subject. In my former article I expressed myself in this way. It has always seemed to me there must be two kinds of pain in a dental operation. One kind, that is the actual pain (the actual sensation), carried from the point of contact of the instrument to the brain, and another, perhaps we might say imaginary, that is manufactured in the brain. Any attempts to make dental operations painless must, in my mind, take this theory into consideration. And it was my idea that this first kind of pain must be relatively constant, and only to be controlled by the death or anæsthesia of the dental nerve; while the second, or mental pain, is very variable and potent, and can only be subdued by the way we can influence that mind to control itself.

While I felt the truthfulness of this position, it was my inability to express to you my thoughts, both from lack of time and of understanding myself, that made my little paper so unsatisfactory to me and, presumably, to you also. I used most of my time trying to tell you how to influence that troubled mind, and not in explaining the relations of mind to pain. Man enters life a stranger, but he is endowed with certain undeveloped senses by means of which external objects at once begin to make impressions upon his mind. Nature, whether animate or inanimate, is his complete master. At first he does not see things; he knows nothing about them. He only receives the stimuli which they furnish through the nervous system. But the inner self of this new creature answers these stimuli at first with primary sensations only, soon with ideas also. When first he opens his eyes he has no sight. He can neither see nor locate things. But he does not long remain blind. The power of perception is quickly created in his mind. He can soon see, hear, taste, smell, feel, and at last he conquers the world by perceiving it. It was

formerly believed that the human mind passively received and recorded impressions like a mirror, but modern metaphysics teaches us, on the contrary, the mind is thoroughly active, transforming a physiological change into a psychical result,—i.e., every nerve activity which is concerned in perception is a stimulus to which the mind responds with a distinctly different result,—a result which is peculiar to itself. Sensation really gives us little or no knowledge of the nature of the object. The sensations tell us rather how the object appears to us. It is hard for us to recognize the fact that we do not discover the true nature of things by our perceptions. Strictly speaking, what we call the properties and activities of things are only our sensations,—i.e., psychical conditions arising from stimuli which proceed from the effect of external objects upon the nerves. When we speak of the sound of a bell, we commonly, but erroneously, consider that the sound belongs to the bell. As a matter of fact, the sensation we are thinking of is wholly a psychical condition. It is in our minds and belongs to us, not the bell. If this bell were rung where no life exists, it would produce no sound, if by sound we mean the sensations which we usually describe as the ringing of a bell. Suppose there were no other means of our acquiring a knowledge of this bell except by this one sensation, which we may now describe as a psychical condition created by the mind itself under the stimulus of a nerve change, which was occasioned by pulsations proceeding from the bell and falling upon the drum of the ear. Evidently this one sensation would give us very little of our present idea of a bell. It is thus easy to see that our idea of the bell is not a single mental image which the perceptions have engraved on the mind; but it is itself a creation of the active mind in all the various activities which have been stimulated by the several sensations occasioned by the contact which that bell has made with sense nerves through other forms of matter. The mind by its acting through one sense can create a very limited idea of the nature of things, and by the best exercise of all the senses it can still give us only an incomplete idea. This theory of ideas, as the product of the active mind, explains why it is no two persons have exactly the same ideas as the result of an observation of a given object. We do not perceive anything by a simple act of the mind in becoming conscious of mere excitations. As soon as there is the dawn of an idea, the foundation is laid for real perception. The sense powers build upon beginnings almost infinitesimally small. They gain in

strength by exercise. The sense organs are furnished ready made, though undeveloped, for the purpose of giving the stimuli which are to furnish to the mind the evidences of the existence and nature of the external world. But the mind's resistance to these stimuli—i.e., the sensations—is at first very feeble. The new-born infant may be supposed to stop with the mere sensation, because he is incapable of adding anything to it. Only in the most elementary sense can he be said to have any perceptions. He has a mind feebly active; he maintains a continual, though feeble, resistance against the stimuli that come through the sense organs and nerves, and somehow records these efforts or sensations. Soon he has recollections, comparisons, ideas, which he can bring to bear upon all new stimuli; then, and not till then, he begins to see, feel, hear, taste, and smell in a real sense.

It is in the recognition of this second act of perception, called *apperception*, that the new philosophy differs from the old. All our sensations, according to the modern theory, are largely the direct result of the activity of the mind in this secondary perception, assimilation, *apperception*. Simple, primary perceptions play an essential but relatively small part in this process. So soon as they arise in consciousness as the result of some stimuli from the special sense nerves, they are immediately joined to similar feelings or related ideas already in the mind. Thus held in consciousness for a time, they become cleared, more definitely connected with other related mental activities, and so assimilated or *apperceived*. THIS SECOND PSYCHICAL PROCESS ASSUMES AN IMPORTANCE IN ALL OUR SENSATIONS FAR BEYOND THE PRIMARY PERCEPTIONS, AND IT IS THIS FACT WHICH IS OF THE GREATEST SIGNIFICANCE IN SUGGESTING TRUE METHODS OF ACQUIRING KNOWLEDGE THROUGH THE SENSES. It leads to the inevitable conclusion that the character of our sensations and the kind of knowledge we acquire through them depend of necessity upon the character of the sensations previously *apperceived* and the knowledge already acquired. It would be difficult to trace with accuracy the character of the mental processes which go on in those more common and more limited perceptions, but it will not be doubted, I think, that the underlying principle is the same in all cases of sense activity; indeed, there is no lack of authority to sustain this view. All modern writers on this subject emphasize the idea of continuity in the capacity of sensation. This capacity does not spring afresh each time in the human being

out of material incapable of sensation ; but it is an acquired wealth of psychic power which has been created out of the proper use of an inherited endowment, without which there could be no sensation and no knowledge.

• Every crude fact of nature that excites this power of sensation is transformed by it into a new fact whose character depends upon the immediate psychical use which the mind perceiving the fact is able to make of it. This is not saying that the mind creates the facts, that the world exists only in the living mind. Modern philosophy does not doubt the existence of the great universe, of facts apart from and independent from the mind, but when through sensation the mind perceives these crude facts, it can grasp them only as it can modify them to meet its own power of assimilation. Can you not understand from all this the necessity of taking the mind into account in your efforts to control the pain in your dental operations? I take it for granted—and I hope I am not in error—you have used all the mechanical and medicinal adjuncts to control the pain. And in doing this you have quite largely influenced the mind, because you cannot have done all this without impressing your patient with your kindness of heart, and if you have done that, you are far on the way to the control of your patient. I cannot here go over this ground, but in connection with the subject of mechanical and medicinal adjuncts I would recommend to your attention a paper entitled, "Our Mission: How shall We discharge It?" by B. Holly Smith, published in the April, 1900, *Dental Digest*.

To become personal, a long time ago, when I was receiving many patients for whom I had never operated, there was hardly a day passed but some one got out of my chair and remarked that never had he been hurt so little. Now I use all sorts of pain-producing instruments, and use them thoroughly ; but somehow I do not make them hurt as some seem to do. And I honestly believe it is through their minds that I influence them. It is needless for me to enumerate all the things I do and you must do to gain this effect. My idea in bringing this subject before you is simply to impress you with the necessity of controlling the minds of your patients, and the truth of my statement that it can be done, and in conjunction with the mechanical and medicinal aids we have we can thus make our operations more easily endured by our patients. In closing, I would say I am not a Christian Scientist nor a hypnotist. I

believe there are such things as pain and disease in this world, and thus should take exceptions to the Christian Scientists. I believe, while hypnotism is so little understood by the masses, we, at least we younger men, had better not identify ourselves with it. In fact, after all, I think I am just a plain man with a kind heart. I recognize suffering, either of the body or mind, whenever I see it, and I maintain the necessity of controlling the one as well as the other if you are to have full control of your patients.

Reviews of Dental Literature.

THE MAKING OF MODELS WHICH ARE DURABLE, AND WHICH CAN BE PAINTED. By Dr. G. Port, Heidelberg.¹

The ordinary model made from plaster of Paris is not as hard and durable as could be desired, and it fails to suggest the color of the tissues which it represents. The author takes it for granted that the production of a model more durable than the one commonly made, and also of one which can be painted so as to represent in a lifelike way the conditions of the tissues as they exist either in health or disease, would be an end much to be desired. And, first, he reviews the way in which attempts have been made for the improvement of models.

A much used method is to simply paint the plaster model with an oil color. The author says that this does not accomplish much, as the color soon strips off, and the appearance and value of the model are thus seriously impaired. A second method is that of Professor de Marion and Touvet-Fanton. By this method, plaster of Paris is abandoned and a mixture of two parts paraffin to one each of wax and stearin is used. These three substances are melted together and coloring-matter added. To reproduce the color of gum-tissue madder-red and carmine are used, and for the tooth-substance mignonette yellow. The properly colored waxy mixture is poured warm into the impression and a model produced. The

¹ Die Herstellung dauerhafter und bemalbarer Modelle, von Dr. med. G. Port, a. o. Universitätsprofessor und Leiter des zahnärztlichen Instituts in Heidelberg. Oesterreichisch-ungarische Vierteljahrsschrift für Zahnheilkunde, October, 1901.

process of making a model in this way is very complicated, and takes much time. Very beautiful results can, however, be obtained by it.

The author next speaks of a much used process whereby a plaster model is boiled in stearin. By this means a model obtains a very beautiful yellowish color, but its durability is not really increased. A fourth method is that of Julke. Take six parts of plaster of Paris and one part of freshly slacked lime. Mix these together and use as ordinary plaster. When the models are well dried, place in a ferrosulphate and zinc sulphate solution. A fifth method consists in immersing plaster models, which have been well dried, in an alum solution. The models to be immersed for half an hour. The solution should be made of one part iron-free alum and six parts water. Although much has been attained for the improvement of models by the above-mentioned methods, the author believes that his own method is a decided advance upon those described. He uses a mixture of plaster of Paris, chalk, and a glue solution. This combination is poured into the impression and allowed to harden. The glue to be used is not the common cabinet-maker's glue, but French hare or rabbit glue. Of this glue a three to five per cent. solution is made. After the preparation of the glue solution, a mixture of plaster and chalk is made in the proportion of three parts plaster and one part chalk. This mixture must be very exact. The plaster-chalk mixture must now be made with the glue solution into a stiff porridge. This porridge cannot be poured into an impression as if it were a simple plaster mixture; it is too viscous. A hair paint-brush must be used, and the material must be painted into the irregularities of the impression. By this means the impression can be filled. At least twelve hours are required for hardening before the model can be separated from the impression. Any form of impression material can be used. A model made in this way has at first almost the hardness of a plaster model, and after about eight days it is like hard wood to cut with a knife. The model must now be prepared for painting by a coating of linseed oil. When this is thoroughly dry, oil colors can be used. These must be much thinned with turpentine. It is better to apply several thin coats than one thick one. The author gives the following list of colors which he finds useful in the painting of models:

1. Madder lake 3, dark rose.
2. Bright, English red.

3. Carmine cinnabar.
4. Light ochre 1.
5. Clear, brilliant, yellow.
6. Terra di Siena.
7. Prussian blue.
8. Parisian, ultramarine.
9. Clear green, cinnabar.
10. Burned terra di Siena.
11. Ivory black.
12. Kremnitz white.

For the representation of normal mucous membrane a mixture of carmine cinnabar and Kremnitz white is to be used. Madder lake with white gives a rose-color shading into a blue which represents an inflamed mucous membrane. The color of the teeth is produced by a mixture of ochre and white. The unessential parts of the model are painted black. Models constructed by the above methods are not only very durable, but are also true to nature, and well repay the time spent upon them.

WILLIAM H. POTTER.

Reports of Society Meetings.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, Mass., on Wednesday evening, October 2, 1901, at six o'clock, the President, V. C. Pond, in the chair.

A paper was read by Dr. E. K. Wedelstaedt, of St. Paul, Minn., subject, "Faulty Environment."

(For Dr. Wedelstaedt's paper, see page 1.)

DISCUSSION.

President Pond.—Gentlemen, you have listened to this very interesting paper. This is a subject that we have heard discussed a great many times; many of you have expressed your opinions on it upon previous occasions, and I have no doubt many of you would like to do so again, especially with the new light we have received. The subject is open for discussion.

Dr. Bogue.—I have not a new idea, not one; unless it be to offer to our friend, Dr. Wedelstaedt, my condolences for the section of country he lives in. The specimens that he has been kind enough to show us here to-night lead me to sympathize most heartily with him. I do not wonder at all that he should have been moved with the holy anger that he has expressed here this evening. If that is the kind of contour filling they have up their way, I am sorry for them. In regard to Dr. Wedelstaedt's paper, I have no words of criticism to offer.

But, gentlemen, Dr. Wedelstaedt left out something. When he talks to us about environment, and gives us to understand that projecting and rough bodies of amalgam are going to lead to or cause an environment that must result disastrously to the patient, I say "Amen" to that; also, when a tooth is extracted from the mouth, wherever that extraction may have occurred, there will be faulty contact. And this I say, notwithstanding Dr. Wedelstaedt's assertion (and he is an authority on faulty environment) that if we would but fill four teeth side by side in the same mouth, two of them after the manner of Dr. Beck, using means for prevention, and two not, we should in a short time learn what prevention means, and adopt it.

Dr. Wedelstaedt will, I am sure, forgive me if I repeat, as well as I can from memory, a few words that I dictated to my amanuensis, over a patient, not many weeks since. "Mrs. B., aged fifty-four or fifty-five; right lower third molar and second molar; proximal cavities filled with amalgam; posterior cavity of third molar also filled with amalgam to the extent of one-fifth of entire crown; the proximal cavities in the second and third molars did not extend to the grinding surfaces, and the cavities did not extend to the gingival margin." But the teeth had been thoroughly prepared, and were as thoroughly contoured as I knew how to do it. The adjoining teeth, the second permanent molar, and the second bicuspid (for the first molars had all been extracted in childhood), were treated to extension in 1877 (month of May, I believe); they were treated to extension, for the delay was extensive, and were filled with gold, in my most artistic manner. Twenty-four years have passed; the posterior amalgam filled teeth are to-day in as good condition as I could imagine, excepting that they have needed a little patching, done in a few moments. The second molar, anterior proximal, and the second bicuspid, posterior proximal cavity, those two gold fillings

which touched, after about seven years needed further attention. The decayed parts were cut out as well as I could cut them out, and were patched with amalgam; the gold was left where it was. Two years ago I needed to repair them at the lingual and near the grinding surfaces again.

Now, I am perfectly well aware that I lay myself open to the accusation of having been faulty in my work: I should not dare say I was not. Twenty-four years is a good long time. But the same hand that filled those faulty ones filled also the back ones, the third and second molars, and those have lasted the whole twenty-four years, in the same mouth, and as nearly as possible the same surroundings.

Now, what is the matter? I have no hesitation, gentlemen,—leaving out of the question my own faulty manipulation,—I have no hesitation in saying that the extraction of those first permanent molars for that patient, which necessitated the wedging apart of all the posterior teeth, was very largely to blame for such faulty environment as led to a recurrence of decay time after time. And I also felt very much like advocating thorough cleanliness, by whatever method, and the careful instruction in the methods of cleanliness by every operator to every patient.

Dr. Fillebrown.—The gentleman has given us an excellent paper. I have been somewhat familiar with his methods for some years, and my feeling has been that he carries his practice to rather an extreme. I would hardly think it best, in my own practice, to take a cuspid tooth with a medium cavity on the distal side and cut it away so as to have a quarter of it actually a gold filling, when it might have been done without the filling showing at all. But the main proposition is right, that you are generally to cut away the wall of the cavity so that the line of contact of the filling and the tooth-substance shall not rest in contact with any other surface; because, if it does, it will hold a little line of moisture there in a way that will lead to decomposition; and it is hard for the most careful person to keep the surface entirely free.

The point made by my friend at my right is good,—that you must be cleanly. And, secondly, whatever work is done, it must be made as largely as possible self-cleanly.

There is one other idea that the gentleman proposes that I think needs to be guarded against a little. Evils resulting from the operation have, in many cases that have come under my observation,

been of greater importance than prevention of recurrence of decay. I believe that where Riggs disease appears on one or two teeth in the mouth, or in different localities, a very large proportion are the result of too severe separation of teeth. It is not natural. The question of how much we shall separate depends altogether upon the person's skill in placing the filling: it is not necessary to have a very large space. Certainly, any one can fill solidly against a matrix, can equally well fill against the opposing surface of a proximal cavity. When that shall have been filled in, and a thin burnisher (not a quarter part as thick as these trimmers that are sent around here) passed between, it would give a good surface to finish, and by that time the teeth can be easily separated sufficiently to give an opportunity to protect the filling, and not do violence to nature by a wide separation.

I wish to say one word, too, in regard to the Arthur separation, so called. It has been condemned in unmeasured terms here to-night. I will say that for nearly twoscore years I have practised that plan, especially upon the anterior teeth, and I have yet to see the first case of recurrence of decay on account of that method of treatment. Some of my fillings have failed, just as everybody else's have; but invariably the decay has been at those points where I think there was failure in accurate condensation of the filling at the margin, and it occurs more frequently at the mesio-proximal in the upper teeth than elsewhere. Perhaps the idea that I got from reading Dr. Arthur's work was different from that which others may have received. I remember especially Dr. Perry, of New York, criticising the method at one time. He described some of his cases, and how hard he had to work to restore them afterwards. Dr. Perry was personally acquainted with Dr. Arthur. Judging from his description, he secured a very different idea of the Arthur separation, by personal contact, than that which I conceived from reading. Perhaps it was my good fortune not to have seen Dr. Arthur, and not to have taken what was perhaps so extravagant a course. My knowledge of it and conception were diluted by successive cultures from Baltimore away down to Maine, so, instead of the full small-pox, I had only varioloid.

On the molars and bicuspid, of course, it would not now be used to any such extent as Dr. Arthur advised; and I think in Dr. Perry's cases it was that class of cavities that he was referring to. But I am very sure, even on these cases, if you trim back the

edges a little when commencing the operation, as Dr. Arthur recommends, you will find it gives good access to the cavities, after which the edges may be cut until sound margin is obtained; then, properly contouring the teeth and getting the point of contact, you have all that is obtained by wide separation and extensive cutting away for prevention.

And I must disagree a little with the statement that dentine, if left exposed, necessarily decays. I was taught many years ago that if dentine was exposed and well polished, and not left in contact, it was about as little likely to decay as enamel itself. A number of years ago I had a young man in my chair who had had his front teeth treated in Germany for caries. A file, thick enough to remove the decay, had been passed between the incisors up nearly to the gingival margin, but not quite, leaving a shoulder, so that they were held apart. The filling had been done, he told me, twelve years before, and when I saw him there had been no sign of recurrence of decay.

It is very easy to be extravagant in our conceptions; it is very easy to be extravagant in our manipulations; and it is very easy to be led by our enthusiasm to feel that this one way is *the* way, and the only way, and that, consequently, every other way must be a failure. Now, I do not think that is the principle for us to go on, because I think it is not true. I was remarking this to-day at a meeting of our instructors. We have some dozen or fifteen different teachers there in operative dentistry, and I presume there are as many individual ways of doing the operations as there are individuals there. I take it for granted that every one of them is right, because any man who has a plan in his mind works out a system, and while there will be some peculiarities about it, if it is well done, it surely will be a success.

I know that our good friend from St. Paul here is a success according to the plan that he has worked out for himself.

Dr. Brackett.—Mr. President, my views are pretty well known. I have been very much interested in the essay, and I have listened with cordial assent to nearly all that has been said.

I had a little experience in my earlier years of practice with the Arthur method. It was brought into the school with something of a spirit of enthusiasm; and I used it in a few cases in my own practice afterwards. In the use of the Arthur method I never went very far. Early in my practice I got the idea that wedging in

advance and making contour fillings was by far the best plan for the patient's comfort in mastication. If this method of filling is capably carried out, there is not only avoidance of the annoyance of the lodgement of food between the teeth and its extremely uncomfortable impingement against the gum, but the liability to new decay coming about the filling is very greatly lessened. So I have been practically all along a believer in advance wedging and full restoration, or exaggeration, of contour.

I believe, also, as has been suggested by the last speaker, that there are a great many instances of undue wedging, making more space than is necessary. Four thicknesses of tape, as is asked for by some operators, seem to me more than is necessary for making, with properly shaped instruments, fillings that may fully restore the contour.

I have been very much impressed by what Dr. Bogue has said to us about how many of our embarrassments may be traced back to a loss of natural conditions. One of the instances where I have lamentably failed to give comfort by restoration or exaggeration of the proximal contour has been in the case where teeth have been lost, and the remaining teeth, perhaps of people past middle life, are not solid in their sockets. Notwithstanding the contour is restored and exaggerated, patients complain of the nuisance of food being driven into the spaces. This is on account of the teeth springing in their sockets, or moving away from each other, being permitted to do so by the breaks in the arch.

Dr. Bogue has gone very far in answering one question which I had in mind of the very great desirability of not lessening the number of teeth which nature has put in the mouth, that they may be kept shoulder to shoulder for the advantage of contact.

On one point I cannot agree with the essayist. If I rightly understood him, he expressed himself to the effect that, if the ideal operation cannot be performed, we should not undertake to operate at all. (Dr. Wedelstaedt: "Unless lasting benefit will result.") If the essayist had said that, I would suggest that all of us see cases where, if we are to render the patient service at all, we have to depart somewhat from following any one plan or operating upon any one particular principle. There are instances in the practice of all of us where the advance wedging and the contour filling, or its exaggeration, for one reason or another, are not advisable. I think every operator should be a man of resourcefulness. I think he

should be a man of sufficient comprehensiveness of ideas not to be limited to any one line of operating. The principal filling that I made this morning was in a case where there had been more than a full restoration of contour, which had not been a success. The teeth were not very solid in their sockets, and there had been continued trouble with the lodgement of food until the filling fell out. I filled the cavity, leaving a wide space, at the patient's earnest request, and in accordance with my own conviction that that was the best thing to do under the circumstances.

Varying circumstances require varying resources. I do not think we should decline to operate in any case, even if the ideal result is not to be obtained, if we are conscientiously impressed that a plan which we may adopt will render the patient the best service that the condition permit. We are accustomed with many things in our experience to say that *if* the circumstances were so and so, consequences would be so and so, or our procedure would be so and so; but practically that "if" is not the right thing to put there. It is a condition that confronts us, and we must take that condition, or take the group of conditions, as they are actually, and do with those existing conditions the best which our ability and the circumstances permit.

Dr. Bogue.—Mr. President, in answer to the question, I am perfectly willing to tell Dr. Wedelstaedt how to separate teeth, and incidentally will say to the rest of the gentlemen that if, by using what is called Japanese grass-line, a loop is put between two teeth, from the outside in, and then the two free ends of the loop are tied into that loop between the teeth with two or three knots, it ties the silk in such fashion that you only have to leave it for two or three or four days, and the work is done. The loop is drawn through between the teeth by using a piece of floss-silk to draw it through at the gum margin.

Dr. Wedelstaedt.—Allow me, first of all, to thank you for the kind words you have spoken about me and the work I am doing for the profession. I do what I do because I love my work. Permit me to tell you a story which will answer one of the gentlemen much better than anything else that I know of.

"An old Scotchman lived far out in the country and way in the interior. He had a son who lived with him until he was nineteen years of age. His father then took him into the city. The boy did not sleep very well, and at daybreak he was up and wander-

ing around in the yard, which was back of the house where they lodged. Immediately back of the yard was a railway track. While the boy was wandering around the yard, the limited express went by. Never having seen a train of cars before, he looked at it a moment, and then ran into the house and up to his father, who was still asleep. Frantically grabbing his father, he said, 'Father! father! gie right up; gie right up; the smithy has run away with a whole row of houses, and is now at the lower end of the town!'

Now, what was the cause of this state of affairs? Simply the lad's environment and surroundings. I do not think it is necessary for me to say anything more. This fully answers the gentleman.

I am indeed pleased to have been able to have met with you, and I thank you for the cordial reception that you have given my essay.

On motion, adjourned.

CHARLES H. TAFT, D.M.D.,
Editor American Academy of Dental Science.

HARVARD DENTAL ALUMNI ASSOCIATION.

MEETING called to order by President Cecil P. Wilson. Dr. Thomas Fillebrown, of Boston, Mass., presented two cases of cleft palate.

Dr. Fillebrown.—This first patient is a child two years old, born with a wide cleft in the palate, and harelip. At seven weeks old the fissure in the hard palate was closed. Two weeks later the lip was operated on; after that the soft palate was united. At twelve weeks of age a slight secondary operation was done on the lip, which completed the case.

These models show the mouth of this patient, first, as it was before operation; secondly, as it was at five months old; thirdly, as it is at two years of age. The teeth are well erupted and show no signs of injury from the operation. The child itself shows the perfection of the results from the operation upon the lip. The upper lip is fully equal in length and width to a normal lip, with scarcely any trace of cicatricial tissue, and not noticeable by any one not looking for it.

The second patient is a young girl ten years old. She was operated on in the clinic of the school on October 26, 1900, for cleft palate. Although the lip and alveolus were perfect, her

speech was very imperfect. She improved immediately upon completion of the operation, and now is ready to show you the improvement she has made up to this time.

"Where do you live?" "East Boston, Mass." "What is your name?" "Lillian." "What is your middle name?" "Phillips." "What is your last name?" "Sproule." "What is your whole name?" "Lillian Phillips Sproule." "What month is it?" "It is June." "What month were you born in?" "I was born in December."

Some of these words are among the most difficult in the English language to pronounce, yet her articulation is complete, and she is heard with perfect distinctness by every one in the room, as is proved by the response of several persons in the audience farthest from her.

DISCUSSION.

Dr. ———.—I would like to ask the doctor if she has had any special teaching in regard to enunciation or articulation?

Dr. Fillebrown.—Yes; I gave her some hints myself, and she has a school-teacher who understands what I want done and my methods of instruction, and she has taught her intelligently, and the result is her, to me, wonderful improvement. The child is very bright, and has grasped the meaning of things quickly and applied her instruction more quickly than any person I have ever met.

Pictures of these patients and of the models of the mouths were shown upon the screen and more fully described.

A paper was then read by Dr. Henry A. Kelley on "The Control of Our Patients."

(For Dr. Kelley's paper, see page 25.)

Dr. Charles H. Taft, Boston, Mass.—I would like to ask the doctor if he gives any preliminary talk to his patients before he begins his work?

Dr. Kelley, Portland, Me.—No, I do not. It seems to me the whole question is summed up in that expression, kindness of heart. The opinion expressed by Dr. Fillebrown before the National Association last August on Hypnotism pleased me very much. After repeating all the wonderful things related, he expressed his opinion and said, "I do all these things, but I use simple kindness." I remember Dr. Fillebrown replied, "I consider hypnotism is kindness of heart, and that they are one and the same thing." I contend that

it is kindness of heart that gives you the control of your patients, so that when one comes in there is no need of any preparation. As soon as you begin, if you show the spirit, you have this control, for you immediately assume the responsibility, and they at once help you out. I do not give any talk about the matter. Some people have themselves under good control, but there are others whom you must control, and still others you cannot control at all.

Dr. Charles H. Taft, Boston.—Dr. Kelley spoke of the subject of cataphoresis, and I would like to know how many who have used it think favorably of it. I should like to hear from the gentlemen who use it. I see we have Dr. Gillett with us, and I would like to hear especially from him.

Dr. H. W. Gillett, Newport, R. I.—I am still using cataphoresis for certain cases, and I shall still continue to do so, for I think that it can be used satisfactorily in the majority of cases. For instance, if we have one where it is absolutely necessary to do something, where the patient demands that something be done and is willing to pay for the time it takes to use it, I think it is an excellent thing. I had, within a few days, a patient in whose family it has been used, and I prepared to fill a cavity without it, but he would not consent; he wanted me to use cataphoresis. I keep my appliances for just such patients. It is a matter of very great regret to me that others have not succeeded in it. What I hoped, when I was experimenting in helping to start you along the line of cataphoresis, was that others would be able to solve that problem, that is, the reduction of time. I do not find, myself, that I use any less time than I did then. As I am on my feet, I may, perhaps, say in answer to the question asked me, that I have yet to see any ill results from the intelligent use of cataphoresis. I question very strongly whether any ill results come from its intelligent use, but rather from its misuse.

**INTERNATIONAL DENTAL FEDERATION: MEETINGS
OF EXECUTIVE COUNCIL, SUBCOMMITTEE, AND
INTERNATIONAL COMMISSION OF EDUCATION.**

EXECUTIVE COUNCIL.

Paris, August 15, 1901.

THE first meeting of the Executive Council of the International Dental Federation convened in Paris August 15, 1900, in the Ecole Dentaire.

The meeting was called to order at 10.30 A.M., the following members being present: Aguilar, of Madrid; Cunningham, of Cambridge; Förberg, of Stockholm; Godon, of Paris; Harlan, of Chicago; Sauvez, of Paris.

Dr. Godon, as president of the Congress, presided at the meeting, and invited the assembly to elect its members.

It was decided that the Executive Council should have a president, two vice-presidents, and a secretary-treasurer.

Dr. Godon was unanimously elected president; Drs. Harlan and Hesse vice-presidents, and Dr. Sauvez secretary-treasurer.

Dr. Godon thanked the assembly for the honor extended to him; and took the chair.

It was decided that the discussions at this meeting should be in French; also that the official communications should be issued in the French language.

The title adopted by the General Assembly, August 14, 1900, "Conseil Executif de la Fédération Dentaire Internationale," was adopted, this title to be always in French.

It was agreed upon that the membership of the Council should be as follows:

The Executive Council of the International Dental Federation shall be composed of the nine members elected by the Third International Dental Congress, and of such adjunct members as shall be elected by the Executive Council after consultation with the national committees.

The following decisions were then adopted:

That the Council represents the dental profession without distinction of nationality.

That the present officers shall hold their appointments until the next meeting of the Council, which will be held in England, in August, 1901.

That the powers of the Council shall expire at the next International Dental Congress.

That vacancies shall be filled by the Council.

That the expenses shall be equally divided among the members.

That the duties of the Council are:

First. To prepare a set of by-laws for the International Dental Federation, to be adopted at its next meeting.

Second. To decide upon the place of meeting and date of the next Congress.

Third. To appoint the International Commission of Education and the other commissions that it may seem advisable to appoint.

A Committee of three was then appointed for the purpose of preparing the by-laws and regulations for the International Dental Federation. Drs. Godon, Sauvez, and Cunningham were elected to constitute this committee. In order to give validity to the decisions of the Council it was decided that the consent of at least three members shall be necessary.

The Council then proceeded to the election of the International Commission of Education.

The following members were appointed: Drs. Kirk, Cunningham, Sandstedt, Queudot, Brophy, Hesse, Aguilar, Martinier, Patterson, Arkövy, Godon, Guillermin, Grevers, Giaria, Limberg, Rosenthal, and Burne.

The officers of the Council are *ex-officio* members of all the commissions, and preside over their meetings until the time of the election of their own officers.

A report upon the organization of the Commission of Education shall be prepared by the executive officers and presented at the next meeting in England.

Adjourned.

EXECUTIVE COUNCIL (SUBCOMMITTEE).

Paris, November 28, 1900.

The meeting was called to order by Dr. Godon.

The Subcommittee acted favorably upon the following resolutions:

That an international review to be known as the *Bulletin of the Executive Council* shall be issued; that the first number of this review shall appear December 30, 1900, and that it should be printed in French, English, and Spanish, in *l'Odontologie*; also that four separate reprints of said bulletin shall be sent to the members of the Council.

That the members of the Executive Council shall be notified of their appointment by a letter signed by the president and secretary-general.

That the resolutions adopted at the closing session of the Congress shall be sent to the presidents and secretaries of the national committees, asking them to carry out these resolutions; also those voted by the Executive Council at its meeting of August 15, 1900.

That the members of the Commission of Education shall be notified of their appointment to said committee.

That in the first number of the bulletin the list of the members of the Commission of Education shall appear.

It was agreed that Drs. Godon and Sauvez should prepare the by-laws, and that they should submit the result of their work to Dr. Cunningham.

Adjourned.

Paris, May 27, 1901.

The meeting was called to order at 8.30 P.M., with Dr. Godon in the chair.

The following resolutions were adopted at this meeting:

1. That the International Dental Federation shall meet in London at the time of the meeting of the British Dental Association.

2. That the Executive Council shall examine at its first meeting in London, on Sunday, August 4, the proposed regulations for the International Dental Federation which the subcommittee has been charged to prepare.

3. That the International Commission of Education shall also meet on the same day in London.

4. That this committee shall meet for the second time in Cambridge, August 7, after the meeting of the British Dental Association.

5. That a second meeting of the Executive Council shall be held after the meeting of the International Commission of Education; this session to be the closing one.

6. That a general meeting of the Executive Council of the International Commission of Education shall take place in Cambridge, August 1, 1901, and that to this meeting delegates of the national committees, societies, or members of the national societies or federations who took part in the organization of the Congress of 1900, as well as the special guests of the Executive Council, shall be invited.

7. That the last meetings of the council shall be held in the buildings of the University of Cambridge.

8. That a banquet shall close this first session of the International Dental Federation.

9. That the power of appointing delegates shall rest with the Executive Council or with the national societies and federations.

10. That announcements concerning these meetings, and a report of the

proceedings of the sessions of the subcommittee, and all necessary information, shall be sent out to interested parties.

Adjourned at 11.30.

London, August 3, 1901.

The meeting of the Subcommittee was held in the Royal Temple Yacht Club.

The minutes of the last session were read and approved.

On motion of Dr. Godon, it was decided to submit to the Executive Council, at its meeting of August 4, the following decisions that had been adopted by the Subcommittee:

That the Executive Council shall proceed to election of officers for the year 1901-1902, and in particular to the election of a president. Confirmation is given the appointment of Dr. Frank, president of the Society of Austrian *Médecins Dentistes*, as adjunct member of the Executive Council for the meetings of the International Dental Federation of 1901, in place of Dr. Pichler.

That the following foreign delegates now in London shall be appointed adjunct members of the Commission of Education for the session of 1901. The subcommittee requests in particular the following appointments: Dr. Haderup, delegate of the Society of Dentists of Denmark; Drs. Baruch, Quartermann, and Thiet, delegates of the Association of Dentists of Belgium; Dr. Viau, delegate of the Society of the Ecole Dentaire of Paris; Dr. Choquet, delegate of the Société d'Odontologie of Paris; Drs. Frank, Weiser, and Zsigmondy, delegates of the Societies of Physicians of Austria. Any of these members may be appointed by the Executive Council to the Commission of Education.

The members of the Executive Council are *ex-officio* members of the Commission of Education.

The report of the secretary-general was adopted.

It was decided that the next meeting of the Executive Council should be held August 5, at four P.M., and that the Commission of Education should be composed of a president, two vice-presidents, and a secretary.

Adjourned at seven P.M.

EXECUTIVE COUNCIL.

London, August 4, 1901.

The meeting was called to order at 9.10 A.M. by President Godon.

The following members were present: Drs. Aguilar, Cunning-

ham, Förberg, Harlan, Hesse, and Sauvez. The following were absent: Drs. Grevers and Pichler.

Before acting upon the regular order of business, the secretary-general read a letter from Dr. Pichler, of Vienna, in which he presented his resignation, and announced that the Society of *Médecins Dentistes* of that city has appointed Dr. Frank president of the society, and Drs. Zsigmondy and Weiser delegates of the society to the London meeting.

He then said that the committee proposed that Dr. Pichler's resignation should be accepted, as he had been obliged to take this step on account of illness, and that a letter be sent him expressing the regrets of the Council; also that Dr. Frank be installed member of the Council for the present session.

This recommendation was approved by the Council.

The president then said that before beginning with the order of business it would be advisable to determine the hour and date of the next meeting.

The Council designated August 5, at four P.M.

The secretary-general then read the minutes of the meeting of August 15, 1900.

Dr. Aguilar remarked that the rôle of the Subcommittee had been limited to the preparation of the by-laws.

The minutes were then approved.

The secretary-general then read the minutes of the meetings of the Subcommittee held in Paris, November 28, 1900, and May 27, 1901, and in London, August 3, 1901.

After the reading of these minutes Dr. Aguilar said that the Subcommittee had exceeded its powers when it occupied itself with questions other than the preparation of the by-laws, and asked that the minutes should be considered not as the proceedings of the Subcommittee, but as those of the Council.

Drs. Hesse and Frank objected to this, saying that it did not make any difference which body had been instrumental in the preparation of the meetings of the International Dental Federation in London and Cambridge. On the contrary, the members that have worked on this question should be thanked by the Council.

Drs. Godon and Sauvez said that the Council had worked regularly on the organization of these meetings, and that it was necessary, considering that the meetings were going to be held in London, to profit by the presence of Dr. Cunningham in Paris for the

preparatory meetings. They accepted the amendment proposed by Dr. Aguilar, and said that they thought it was possible to satisfy him by admitting that during the year there had been held two meetings of the Subcommittee for the preparation of the by-laws, and three meetings of the Council, in which Dr. Cunningham took part to help the Council in the organization of the London meetings.

With these modifications, the minutes were approved.

The secretary-general then read his report on the organization of the Commission of Education.

This report was adopted.

On account of the lateness of the hour, the remaining items in the order of business were deferred to the next meeting.

Adjourned at ten P.M.

London, August 5, 1900.

The meeting was called to order by President Godon at four P.M.

The following members were present: Drs. Aguilar, Cunningham, Förberg, Harlan, Hesse, and Sauvez.

Dr. Sauvez, the secretary-general, read the minutes of the meeting of the preceding day. He announced the order of business, and read the following letters:

1. A letter from Drs. Förberg, Forssman, Sandstedt, and Christensen, proposing that the next meeting of the Executive Council of the International Dental Federation be held in Stockholm.

The discussion of this proposition was deferred to the meeting of August 7, in Cambridge.

2. A letter of Professor Limberg, excusing himself for his inability to be present at the meetings of 1901, expressing regret at the misunderstandings of the closing session of the Congress, and announcing that a congress of Russian dentists, to be held in Odessa in 1902, will decide whether a member shall be appointed by the Russian dentists to the Commission of Education.

3. A letter of Dr. Rosenthal, presenting his resignation, which was unanimously rejected by the Council.

Dr. Sauvez then read his report, which here follows:

GENTLEMEN AND HONORED CONFÈRES,—Permit me to thank you for the great honor that you have conferred upon me by appointing me secretary of the Executive Council of the International Dental Federation.

The second meeting of the Council will take place to-day, beginning the labors which will come to an end in Cambridge, August 7.

The report that I read to you at the beginning of this meeting has informed you of the present situation.

You will recall the creation of the International Dental Federation. It was at the last meeting of the International Dental Congress in Paris, 1900, that it was decided to organize this Federation, in accordance with the requests presented to and accepted by the Congress. You will also remember that at that meeting we were appointed members of the Executive Council. I mention these points simply because I want you to remember that we are the legal representatives of the twelve hundred members of the International Dental Congress. Our powers have been transmitted to us by that body, and will expire at the next Congress. We have emanated directly from the Congress and we must report at its next meeting the course and result of our work.

The purpose of the Federation, as manifested in its constitution, consists especially in providing for international dental congresses and reunions; in maintaining and in extending the relations between the several national committees and societies, and in organizing the several international commissions that it may deem necessary to create; in *résumé*, the International Dental Federation must organize everything that may contribute to the advancement of odontological science.

If that be the purpose of the Federation, then the *rôle* of its Executive Council must be to plan the regulations of the Federation, to supervise their execution, to fix the dates and places of meeting of the international reunions, to summon the several commissions, to carry out the decisions of the Congress, and to examine the propositions submitted to it.

It is according to this order of ideas and in this spirit that we have been working since our last meeting. You will remember that a subcommittee of three members was appointed in order to insure the preparation of the constitution during the year 1900-1901. That committee held its first meeting on November 28, 1900, in Paris, at Dr. Godon's residence. The Subcommittee decided among other things upon the publication of the *Bulletin of the Executive Council of the International Dental Federation* in four languages; this bulletin to serve as the official organ of the Executive Council. *L'Odontologie* has undertaken gratuitously the publication, and several foreign journals have courteously republished the text of said bulletin. We tender them our thanks in the name of the Council.

The members of the Executive Council and of the International Commission of Education have been notified of their appointment to said committees.

A second meeting of the subcommittee was held in Paris, May 27, also at Dr. Godon's residence, as reported in the proceedings. It was at that meeting that the Subcommittee prepared the regulations that we will presently submit to your consideration. It was also at that meeting that we organized the present session of the Council in London, profiting by the attraction offered by the annual meeting of the British Dental Association and of the American Dental Society of Europe.

We have reason to feel satisfied with the result obtained, for all the members that accepted the nominations agreed also to come here. Dr. Pichler is the only one that resigned, and his resignation was on account of ill health.

This first meeting is starting under happy auspices, and is being made delightful by the most cordial reception and the kind and generous hospitality tendered us by our English *confrères*. I think that I shall be acting as your interpreter in asking Mr. Cunningham to transmit our sincere thanks to the president of the British Dental Association.

This first session will emphasize in an indisputable manner the existence of the Executive Council, and hence of the International Dental Federation. This first session seems to assure us that the coming meetings will be followed with as much attention even by the gentlemen of far-off countries, such as Dr. Harlan, and that the preparation for the next Congress, which is our principal *raison d'être*, will be made with the assured assistance of the *confrères* best qualified for the kind of work. It is not our intention in these too short sessions to especially call your attention to the past; we will direct our efforts to the present and future. Consequently we must show you how important it is that the national federations and the various societies should cultivate intimate relations with the Executive Council,—not because the Council desires to interfere in questions of a national character. The Council acts only as a counsellor and organizer, leaving every federation or society completely free and independent, and master of its own acts each in its respective country. This Council must form the legal union between the societies of different nations.

We must also endeavor to represent this Council in our various countries not as though it were a sort of secret committee occupied with great international questions, but as a committee of union, solidarity, and confraternity, ready to receive all the suggestions, all the propositions of the professional federations or societies, and to study them in order to reach impartial conclusions. We must represent that Council conscious of the fact that it is the outcome of a universal election, and that it is a body beneficial, if not essential, to the good understanding and confraternity of the dentists of all countries. Our particular personalities cease to exist; they will modify themselves and disappear. The body alone exists; the cells which compose it are called upon to undergo transformations, to grow old, to be replaced by others; but that matters not. What we must insure is the existence, the vitality, the power of the organ, which is the Executive Council, the active part and the representative of the International Dental Federation. This is why all the efforts of the members must tend to insure the good relations of the Council with the federations.

Our efforts should also be directed towards the formation of solid and well-united federations between the national societies. In France all our efforts have been made towards that end, and we can announce to-day that the French Dental Federation is solidly established. Its first session will be held in Corsica in September, as the Section on Odontology of the French Association for the Advancement of Science, thanks to the efforts of President Godon.

I have yet to speak to you on the Commission of Education, on its organization, and on the work we are going to ask them to perform.

These several points will be the objects of a new report, which will be presented to you in the near future.

In the mean while I beg you, gentlemen and honored *confrères*, to pardon my having occupied your attention for such a long time. Before concluding, I will also ask you to thank Mr. Cunningham, the principal organizer of this session, who has been instrumental in assuring us the honor of a reception in Cambridge, in that ancient university whose reputation has been world-wide for centuries.

The Council adopted this report, and adjourned until August 6.

London, August 6, 1901.—Morning Session.

The meeting was called to order at nine A.M. by President Godon.

The following members were present: Drs. Aguilar, Cunningham, Frank, Harlan, Hesse, and Sauvez.

Dr. Sauvez, the secretary-general, read the minutes of the previous session, which were approved.

The secretary-general proposed the names of Drs. Bryan, Zsigmondy, and Haderup for appointment to the Commission of Education.

The next thing in order should have been the election of officers, but Dr. Frank suggested that before doing this the question of the regulations of the International Dental Federation be taken up.

The meeting then adjourned, after having decided to hold the next meeting on the same day at two P.M.

Afternoon Session.

The meeting was called to order at two P.M.

The following members were present: Drs. Aguilar, Cunningham, Förberg, Frank, Harlan, Hesse, and Sauvez.

The secretary-general read the minutes of the previous session, which were adopted.

The Council decided that at its last meeting a vote of thanks should be addressed to the Royal Temple Yacht Club.

The president asked the Council to place the election of officers at the head of the order of business. He thought that, considering the international character of the Council, a new president should be elected, and refused to remain chairman.

Dr. Sauvez made a few remarks of a similar nature to those of Dr. Godon.

The Council then proceeded to vote for the appointment of officers. The result of the vote for president was as follows: Dr. Godon, 5; Dr. Cunningham, 2.

Dr. Godon declined to accept the chairmanship, and asked for a second balloting, which, however, gave the same results.

The balloting for vice-presidents gave the following results: Dr. Cunningham, 6; Dr. Förberg, 4; Dr. Harlan, 1; Dr. Hesse, 1. Consequently Drs. Cunningham and Förberg were elected vice-presidents.

The Council decided not to vote for secretary-general, but to appoint Dr. Sauvez by acclamation.

On motion of Dr. Brophy, Dr. Pearson, of Canada, was appointed adjunct member of the Commission of Education.

The meeting adjourned at three P.M.

Cambridge, August 7, 1901.

This meeting took place at Trinity College Hall, Cambridge, at six P.M.

The following members were present: Drs. Aguilar, Cunningham, Frank, Harlan, Hesse, and Grevers.

Dr. Sauvez read the minutes of the previous session.

The only question that was discussed was that of fixing the next place of meeting of the Executive Council. The members present were of the opinion that the meeting should be at Stockholm, as proposed by Dr. Förberg and his colleagues.

The meeting then adjourned.

Cambridge, August 8, 1901.

The Council was called to order at nine P.M. by President Godon.

Dr. Sauvez read the minutes of the previous meeting, which were approved.

The plan of appointing a Commission of Public Dental Hygiene was adopted, and a discussion as to the manner in which this commission should be appointed then followed, in which Drs. Sauvez, Aguilar, and Cunningham took part.

A commission of three members was then appointed for one year, this commission to present a report at the next meeting of the Executive Council. Drs. Förberg, Frank, and Cunningham were appointed to this commission. Dr. Frank was intrusted with the initial work of the Commission of Public Dental Hygiene.

Dr. Aguilar asked that it should be plainly specified that the Executive Council represents the several countries. He made a motion, which was amended by Dr. Godon, and which reads as follows:

The International Dental Federation is represented by an Executive Council composed of (1) Members elected by the Congress which represented the different countries.

At this point Dr. Brophy was introduced. He read a telegram from the National Association of Dental Faculties, in which information was given of the extension of the course in dentistry in the United States to four years.

The president requested Dr. Brophy to convey to the Association the thanks and congratulations of the International Dental Federation.

The Council then discussed the question of appointing adjunct members. The question was voted upon and adopted.

Dr. Sauvez presented an amendment, which was also adopted. (This motion, with its amendment, corresponds to Article IX. of the regulations of the International Dental Federation.)

Dr. Sauvez then presented another amendment to Article XIV. of the regulations; this, however, was rejected. The amendment referred to the power of the Council, following the recommendation of the national federations, to appoint members to the Commission of Education.

The following article was added to the regulations:

ARTICLE XV.—These regulations are adopted for one year, and shall be revised at the next session of the Federation.

The question of deciding upon the date and place of meeting of the next International Dental Congress was referred to the next meeting of the Federation, to be held in Stockholm.

It was decided to invite the Russian National Committee to send an adjunct member to the Executive Council and an active member for the Commission of Education.

On motion of Dr. Frank, the Austrian National Committee will be invited to appoint a member to the Executive Council as a substitute for Dr. Pichler, who resigned.

The Council congratulated the National Austrian Committee on having sent Dr. Frank to the first session.

It was decided to send the thanks of the Council to the Royal

Temple Yacht Club, to the British Dental Association, and to Dr. Cunningham for their contributions towards the success of the meetings.

The members of the Council were commissioned to prepare reports, to be sent to the secretary-general, concerning the condition of dental affairs in every country, and the number and addresses of the schools, of societies, of journals, and of dentists.

The officers of the Council were invited to present at Stockholm a report concerning the changes to be made in the Council with regard to the number of members of which it should be composed.

It was also decided that each national dental federation should confirm the powers of its delegates to appoint representatives.

Adjourned at eleven A.M.—*Dental Cosmos*.

(To be Continued.)

Editorial.

WHAT IS THE TRUE STANDARD OF MENTAL TRAINING?

THE question, "What constitutes a true standard of cultivation?" is, perhaps, one of the most difficult problems to decide. The individual who has reached the Ph.D. of our higher universities has no difficulty in answering this, and that without a moment's reflection, and his opinion will be in accord with the recognized standard of Caucasian civilization. It requires no argument to prove that this decision would not be acceptable to that older civilization, the oldest existing,—the Chinese,—and yet the difference in results obtained through the more modern and the older methods may not be clearly distinguishable; in fact, it may be said that the Chinese culture is in all respects the equal of that developed in more recent historical periods.

It is, therefore, very evident that it is not so much the character of training given the mind as it is that the mental forces should be kept in continued activity.

This naturally brings to the surface prominently, Is it essential that this mental training be confined to certain routine studies in order to reach a high standard of cultivation? The answer

will be given always in accordance with the tastes and experiences of the individual. One will say that no man can be considered scholarly who has not a thorough familiarity with the classics. Another will regard Greek as unimportant, but that Latin is essential to mental training. The mathematician will give the languages a second place, regarding his favorite study as deserving a prominent position as a strengthener of the intellect. All of these combined will regard with contempt the man or woman deficient in these, and will unhesitatingly regard them as uneducated. It seems to the writer that this is a forced conception of the true meaning of mental development. While all of these studies occupy, and will probably ever continue to occupy, the most prominent place in the curriculum of the world, they are yet a part only of that educational training, and the majority must seek elsewhere and through altogether different methods to arrive at the same end,—the cultivation of the intellectual powers. The world is full of examples of great mental vigor accomplished without the aid of any university or college, and through entirely different channels of cultivation.

What constitutes a foundational education preparatory to the study of any subject? The colleges and universities vary in their several standards of entrance, but all are formed upon certain established lines, and these are prohibitory to the man trained in work of a different character. This will be right or wrong according to the point of view taken, but it certainly cannot be changed. While this is true, it does not follow that the standard is a correct one.

In some European countries, notably Germany, the man who wishes to be in one of the so-called learned professions—law, medicine, theology, etc.—must start from the Gymnasium; and the man who graduates from the Polytechnic school will never be able to reach these professions, no matter what may be his ambitions. It will hardly be contended that the school that prepares and graduates the great civil and mechanical engineers is not productive of an equal amount of mental growth as that developed under a different training in the Gymnasium. It seems that a more reasonable conception of the subject is desirable, and that the man of intellectual force should have recognition, whether this came to him through the universities or through mental development the result of constant contact with the world's activities.

It is constantly in evidence that this mistaken course warps the minds of those in responsible positions. They frequently assume conclusions based on recognized standards and not upon common sense methods of judgment.

The true test of a cultivated intellect lies not in the too rigid adherence to the minor details of an established curriculum, but in observing the mental capabilities of the individual to grasp the work of the world in its various departments of intellectual development, and the power to make this a part of the individual life. This will mean something more than is taught in the schools; but with that as an assured foundation, the mind will develop by the accretions of years and become fitted for all the higher responsibilities of life.

IS SPELLING AN IMPORTANT FACTOR IN EXAMINATION?

CLOSELY connected with the subject of the previous article is that recently made prominent at the meeting of the National Dental Association at Milwaukee.

Upon the programme of this body was a paper by Dr. John S. Marshall, on the "Organization of the Dental Corps of the United States Army." When this paper was read, it was received with evident marks of satisfaction by the majority, as it was a full statement of facts showing the results of this new work and the means taken to secure the greatest proficiency. The writer of this made but one criticism to this otherwise excellent paper, and this was to the following paragraph: "Candidates have presented themselves before our Board who were unable to write a sentence of twenty words without misspelling at least one-fourth of them. . . . Many could neither speak nor write without transgressing many of the rules of English grammar. We, however, are not alone in this, for the Army Medical Board now in session are having the same class of candidates come before them. I need not say that such men did not succeed in passing the examinations of the Army Dental Board, for they generally gave up the attempt after trying two or three subjects. The results of these examinations, it would seem to me, prove very conclusively that there is a great need of raising the standard of the entrance requirements of our dental colleges."

The hope was expressed that this paragraph would be omitted from the official report; but this has not been done, and it remains, as originally read, a reflection upon the intelligence and culture of the dental profession. Coming from this source, it will be accepted at home and abroad as a true statement of the mental training of the dental graduates of America. As it stands, it is a serious libel upon the educational institutions of this country; for, in the last analysis, the blame, if any exists, must be placed upon the shoulders of the educators of the land, both public and private, and not upon the professional schools that must perforce take the product as they find it from the high schools and colleges.

In the opinion of the writer, the standard enforced by the Army Board is, in the light of facts, an unjust one, and does not speak well for the broad intelligence of a body dealing with this important matter.

The spelling of English words has been from the inception of the language a trial to all classes; and it is a question whether there is a single individual, from childhood to old age, who is not obliged to refer frequently to the dictionary to be assured of correctness in spelling.

The methods devised by the older educators, and which were measurably successful, have seemingly been abandoned, for many of the present graduates of our high schools and universities seem to be deficient in ability to spell correctly some of the simplest words. That this will be increased is certain, for chirography is not as thoroughly taught as formerly. Orthography is fast becoming a lost art, and from present indications the present century will end with spelling left to proof-readers, printers, type-writers, and stenographers, and the ability to write a legible hand lost to the world.

In illustration of this, and confirmatory of its truth, the following quotations are taken from a recent article in a St. Louis journal giving interviews with prominent educators upon this subject.

"The ability to spell well, it seems to me, is not worth what it costs," said Chancellor Winfield S. Chaplin, of Washington University, yesterday afternoon.

"He was discussing the recent trouble in Northwestern University, Chicago, where several students are now diligently conning their spelling-books before their instructor will permit them to pursue their studies farther.

“ ‘The only use one has for spelling,’ continued the Chancellor, ‘is when he writes. You do not spell out the words you use in conversation. You do not spell the words you hear in order to understand them. You do not stop to spell the words you read. And even when it comes to writing, one can express himself almost as well by bad spelling as by good.

“ ‘This is not to be taken as an excuse for carelessness in orthography, and in Washington University we use every reasonable effort to make the students perfect in this branch. . . .

“ ‘English is about the worst language in this respect. And some persons appear to be utterly incapable of learning to spell. One of my former pupils, whose orthography was especially bad, told me that he had learned to read by the word system, and had never been able to tell what letters composed the words he used. The habit of mind, once formed, he could not overcome, though he tried hard.

“ ‘For myself, I used to rather pride myself on my spelling, but it is becoming a lost art with me. I use a stenographer for nearly everything I have to write, and when I do undertake to write a letter myself, I sometimes run across a very common word I am not sure about until I have written it out to see what it looks like.’

“ ‘Chicago schools have been criticised by Professor Clarke, of Northwestern University, because they pay little attention to spelling in the old-fashioned way. The ‘word method,’ he asserts, is responsible for the shortcomings of the young men who come to him for instruction in the higher English branches. By that method the pupil is taught to identify words as a whole, but never gets any definite idea of the parts of the word or its origin.

“ ‘Principal Bryan, of the High School, said, ‘To spell well requires lifelong and continuous study. So many words are spelled without regard to their pronunciation that it is a severe tax on the memory to bear them all in mind at once.’ ”

It is in the experience of all educators that the faculty of spelling is not at all natural to the individual, for, as Superintendent Soldan declared, “Spelling is not a natural gift with anybody.” It cannot be compared with the linguistic and mathematical faculties, these being usually an inheritance. A distinguished English writer acknowledged he was never able to accomplish the multiplication table. In truth, there is an idiotic side to the

mentality of every human being, or, to adopt the teaching of Dr. Talbot, we are, in some respects, all degenerates.

DR. R. W. MORGAN RETIRED.

UPON the expiration of his "sick leave" Dr. Morgan, of the Army Dental Examining Board, will retire from the service.

Dr. John H. Hess, Army Dental Surgeon, now stationed at West Point, has been promoted to the position.

Dr. Hess is a young man about thirty years of age and reported to possess rather more than the average foundation knowledge of the work of his profession.

Bibliography.

SIMON'S MANUAL OF CHEMISTRY. A Guide to Lectures and Laboratory Work for Beginners in Chemistry, specially adapted for Students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph.D., M.D., Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, in the Maryland College of Pharmacy, and in the Baltimore College of Dental Surgery. Seventh Edition. Thoroughly revised and much enlarged. In one octavo volume of six hundred and thirteen pages, with sixty-six engravings, one colored spectra plate, and eight colored plates representing sixty-four of the most important chemical reactions. Cloth, \$3.00, net. Lea Brothers & Co., Publishers, Philadelphia and New York, 1901.

The seventh edition of a book means an appreciation that entirely settles its value and inclines the reviewer to hesitate to express an adverse opinion if such be felt, but in the case of the present volume the constant demand is fully justified by its contents and the methods adopted in its preparation.

The author has the happy faculty of combining instruction and, at the same time, holding the interest of the student, and this he accomplishes by a singular lucidity of expression with con-

densation of subject matter. The elementary principles of chemistry, generally so difficult for the beginner to master, are not only made clear, but are impressively forced upon the reasoning intelligence, and are silently made part of the mental capital of the student without perceptible effort. This is the gift of the true teacher, and Professor Simon seems to possess it in a remarkable degree.

The author in his preface to this edition says of it, "The call for a new—the seventh—edition of this manual has afforded the author an opportunity to incorporate, as far as practicable, the many important and latest results of scientific progress. At the same time he has complied with the request of many teachers to present more fully than was done heretofore the parts on *chemical physics* and on *physiological chemistry*."

"It is hoped that with these alterations and additions the manual will fully accomplish its object,—viz., *to furnish to the student in concise form a clear presentation of the science, an intelligent discussion of those substances which are of interest to him, and a reliable guide to his work in the laboratory.*"

The student will find this statement not too strongly written, for it is rare to find a book of this size more free from error.

The attention of the author is called to one of these on page 130, in the paragraph devoted to nitrogen monoxide, where the discoverer of anæsthesia is given as Dr. *Howard Wells*. It should have been printed *Horace*.

In the valuable chapter on Physiological Chemistry, in considering the tissues of the teeth, the author uses the term *fangs* as applied to the roots of teeth. This has been obsolete in dentistry for many years.

The illustrations are superior, especially the colored spectra plate and the eight colored plates representing sixty-four chemical reactions.

This work should have an important place in dental colleges among the series of text-books, for in most respects it is better adapted for this purpose than many of those at present in use.

The book has been published with the usual care of the well-known house of Lea Brothers & Co., nothing being omitted to make it worthy the subject and the author.

Obituary.

CHARLES J. ESSIG, M.D., D.D.S.

DIED at Wallingford, Pa., his suburban residence, December 2, 1901, Dr. Charles J. Essig, after a few days' illness of pneumonia.

Dr. Essig was born in Philadelphia July 23, 1841, and continued through his sixty years of life a resident and practitioner of dentistry in that city.

His father was Christian S. Essig, and his grandfather was an officer in the Holland naval service.

His early education was acquired in the public schools of Philadelphia. After graduation he entered an attorney's office for the study of law, but this not being to his taste he was finally, in his seventeenth year, September 10, 1857, placed with William R. Hall, who at that time enjoyed the deserved reputation of being the best porcelain block manufacturer in Philadelphia, if not in the country. At that period very few dental practitioners of reputation would use, upon a gold base, any other but block teeth and those made for each individual case. This continued until the general adoption of rubber bases about 1858, which had the effect of destroying much of the skilled mechanical dentistry of that time and that of the years antedating it. Dr. Essig entered, therefore, into dental studies at a transition period. And it seemed, at the time, as though the skill acquired would be lost through the entire change of methods. It subsequently proved the best foundation possible for his future life work. In the Hall laboratory were constructed all the usual mechanical appliances for the oral cavity used in dentistry. Into this valuable experience Dr. Essig was inducted at the most plastic period of life. Fortunately for him he possessed in large degree the mechanical taste that could receive the full benefit from such an experience.

He remained in the Hall Laboratory until his majority, a period of four years. Immediately subsequent to this, 1862, he fitted up a laboratory of his own on Arch Street below Seventh, and at a later date removed to Tenth and Arch Streets.

About the year 1867 he abandoned the preparation of mechanical work for dentists and established a dental supply house in

Baltimore, Md. This venture did not prove satisfactory and was abandoned after a comparatively brief period.

He was married in 1868 to Miss Mary Sturges, daughter of George Sturges.

Returning from Baltimore to Philadelphia in 1869, he entered into copartnership in 1870 with Dr. Louis Jack in the prosthetic portion of the latter's practice.

In 1872, when Dr. Jack removed to Sixteenth and Locust Streets, Dr. Essig became associated with him in operative dental practice. This association terminated by mutual consent in 1875, but he still retained offices in the building. Through these favorable conditions, coupled with his own skill, he gradually built up a large practice from the best elements in the city.

It is greatly to the credit of both these prominent operators that after all their years of associated effort, Dr. Jack could write of this period that "notwithstanding his (Essig's) strong nature and sensitiveness, our intercourse through all these years had been harmoniously sustained."

It was subsequently to his return from Baltimore that Dr. Essig matriculated at Jefferson Medical College, and graduated in 1871. His motives in taking the medical degree in preference to the dental may only be surmised, but it is presumed that he regarded his practical knowledge of dentistry as fully equal to the dental degree of that period.

Before his graduation in medicine, he spent much time in the chemical laboratory conducted by Dr. Henry Leffmann, not being fully satisfied with the knowledge of this science obtained in the medical school. The training thus secured became of great practical value during his later career; in fact, made it possible for him to command a wide circle of readers for his "Dental Metallurgy," which reached a fourth edition in 1900.

He was appointed to the position of Demonstrator in the Philadelphia Dental College, and at the close of service of two years in this capacity the honorary degree of Doctor of Dental Surgery was conferred upon him.

Upon the death of Professor E. Wildman in 1876, Dr. Essig was elected to the chair of Mechanical Dentistry and Metallurgy in the Pennsylvania College of Dental Surgery.

Before the completion of two years in this college, there came overtures from the University of Pennsylvania to this faculty to

combine the forces of the two institutions into one dental department at the University. This was not acceptable to the majority of the faculty of the Pennsylvania College of Dental Surgery, but Dr. Essig and Dr. E. T. Darby, then professor of Operative Dentistry and Dental Histology, in 1878, arranged with the University authorities to establish a dental school in connection with the Medical Department, and they were accordingly elected on March 15, 1878, to their respective chairs. The department held its first session 1878 and 1879 with Dr. Essig as secretary, he having been elected to that position on March 15 of that year, the deanship not being recognized at that time in the professional schools.

The Department of Dentistry flourished under Dr. Essig's care, but the work trespassed much upon his valuable time, and he resigned the position of secretary in 1883, and James Truman, then a member of the faculty, was elected to fill the position. Subsequently the trustees changed the title of secretary to that of dean, the title given the presiding officer in all departments of the University at the present time.

Dr. Essig continued to perform his duties as Professor of Mechanical Dentistry and Metallurgy up to a few months prior to his death, a period of twenty-three years. On July 5, 1901, he tendered his resignation to the Provost of the University, severing all connection with university work.

It was during this period of twenty-three years that the great development of this school took place, and to Dr. Essig is due a full share of honor for the progress made, for his influence was always on the side of advanced development. He and Professor Darby laid the foundation and successfully tided over the most difficult period of the school's life. That the department received the benefit of his growing reputation, national and international, there can be no question. His lectures on his favorite branch were regarded as superior, exhibiting, as they did, a thorough mastery of the subjects treated.

His earlier work in ceramics in the Hall Laboratory enabled him not only to clearly explain the delicate process of tooth manufacture, but also gave him special skill in what has been known as the "continuous gum" artificial denture, the preparation of which requires ability of a high order.

The first edition of Dr. Essig's work on Dental Metallurgy attracted immediate attention, as it was the first of its kind; indeed,

IN MEMORIAM.

ZACHARY T. SAILER, D.D.S., died June 16, 1901.

WHEREAS, We have learned of the death of our esteemed fellow-member and Treasurer, Dr. Zachary T. Sailer, who was for many years one of the most earnest and active members of The Alumni Association of the New York College of Dentistry; and

WHEREAS, We feel that in the demise of Dr. Sailer our Association has sustained a serious loss and a place made vacant that it will be hard to fill; that we have been deprived of an able adviser and stanch friend, a man of integrity and professional worth; therefore be it

Resolved, That we do hereby express profound sorrow and regret at the seemingly untimely removal of our respected brother, we will miss his kindly presence, his able advice and loyal service, and his memory will ever be held in tender regard.

Resolved, That we extend to the widow and daughter of Dr. Sailer our sympathy in their bereavement, and that these resolutions be spread in full upon the minute-book, and a copy suitably engrossed presented to the family.

JOHN I. HART,
President,
J. OSTRAM TAYLOR,
Secretary,
BENJAMIN C. NASH,
Chairman,
BENJ. F. LUCKEY,
CHAS. A. DU BOIS,
Committee.

Current News.

NORTHERN ILLINOIS DENTAL SOCIETY.

THE Northern Illinois Dental Society held its fourteenth annual meeting at Joliet, October 16, 17, 1901, and elected the following officers for the ensuing year:

President, Dr. C. J. Sowle, Rockford; Vice-President, Dr.

J. E. Hancock, Joliet; Secretary, Dr. J. J. Reed, Rockford; Treasurer, Dr. M. R. Harned, Rockford; Dr. C. J. Underwood, Elgin, member of Executive Committee.

Meeting will be held at Rockford in 1902.

J. J. REED,
Secretary.

SOUTHERN BRANCH NATIONAL DENTAL ASSOCIATION. /

THE fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, February 18, 1902. The Association will be in session four days. Atlanta is now the best located and equipped city in the South for holding such a meeting. This fact assures a large attendance. The Southeastern Passenger Association will give a rate of one and one-third fare for the round trip. All members are earnestly requested to be present.

C. L. ALEXANDER,
Corresponding Secretary S. B. N. D. A.

CHARLOTTE, N. C.

NEW YORK ODONTOLOGICAL SOCIETY.

THE thirty-fifth anniversary meeting of the New York Odontological Society will be held at the Academy of Medicine, No. 17 West Forty-third Street, New York City, January 21, 1902.

For the afternoon session, which will begin at two o'clock, an interesting list of clinics has been arranged, which will include the following:

Dr. G. W. Schwartz, of Chicago: Making and Setting Porcelain Bridge.

Dr. Geo. Evans, of New York: Demonstrating the Use of Gutta-percha Cement for setting Crowns and Bridges, and exhibiting New Instruments and Appliances for its Manipulation.

Dr. Robert Good, of Chicago: Treating a Case of Pyorrhœa and exhibiting a Case under Treatment.

Dr. Joseph Head, of Philadelphia: Demonstrating a New Method of Bleaching and Sterilizing Stained Enamel.

At this session also, Dr. Hinkins, of Chicago, will read a paper on "The Further Consideration of the Disintegration of Cements when used in or around the Teeth."

The evening meeting will take place in the large auditorium of the Academy of Medicine at eight o'clock.

The paper of the evening will be read by Dr. A. W. Harlan, of Chicago; subject, "The Basis of Dental Medicine."

W. D. TRACY,

Corresponding Secretary.

46 WEST THIRTY-SEVENTH STREET, NEW YORK.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

THE fifty-fifth annual meeting of the Pennsylvania Association of Dental Surgeons was held October 8, 1901. The following officers were elected for the ensuing year:

President, Dr. Wilbur F. Litch; Vice-President, Dr. Eben C. Flagg; Secretary, Dr. J. Clarence Salvas; Treasurer and Librarian, Dr. Wm. H. Trueman.

The Pennsylvania Association of Dental Surgeons was organized at Philadelphia, December 16, 1845, and from that date to the present time has had a continuous existence. Dating back as it does to the early days, the dawn of organized effort for professional advancement, it is a connecting link between the past and the present. The society is one of the very few that have been sustained, and is the oldest dental society in the world. Notwithstanding the fact that the organization of other local societies drew from time to time many of its more active members, it has nevertheless continued to hold during this long period its regular stated meetings. The past year has been one of marked prosperity. There has been a large increase in membership, the meetings have been well attended, and have been made the medium for presenting papers of much practical usefulness to the profession, hence having permanent value as contributions to current dental literature.

J. CLARENCE SALVAS,

Secretary.

THE International Dental Journal.

VOL. XXIII.

FEBRUARY, 1902.

No. 2.

Original Communications.¹

FACIAL AND DENTAL HARMONY.²

BY LAWRENCE W. BAKER, D.M.D., BOSTON, MASS.³

MR. PRESIDENT AND FELLOW-MEMBERS OF THE HARVARD ODONTOLOGICAL SOCIETY,—I know that it is considered poor form to begin a paper with an apology, but I am sorry to say that is my condition this evening, as what I am to give you, gentlemen, is nothing more nor less than I give the students at the school. I might also add that these charts I had prepared for school use, and it is through the kindness of Dean Smith that we have them here to-night. With your permission I will read much of what I have to offer, as I think that I can give it in a much more connected manner than by speaking from my notes.

While a student at school and since I have been in private practice I have made somewhat of a study of artistic artificial work. I will endeavor to give you to-night the results of my investigation. I have purposely avoided giving anything that you can find in

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Harvard Odontological Society, April 25, 1901.

³ Instructor in Orthodontia and Lecturer on Artistic Artificial Work at the Dental School of Harvard University.

text-books, and will endeavor to confine myself strictly to the subject.

Possibly you gentlemen might be interested to hear how I worked out some valuable points for myself regarding the work. While studying at school I had occasion to make an entire upper gold denture for a middle-aged woman. As you know, students are not always known to do the correct thing, so I made a mistake by getting the teeth too long, so much so that I was afraid that I would have to do the work over again; but I was instructed to try and shorten the teeth by grinding, so I went to work with a coarse stone and the engine. I was very much worried for fear I could not restore the even, graceful curves of the cutting edges of the teeth.

After taking off about one line I tried them in, and to my surprise they looked a great deal better than they did previous to grinding; in fact, they looked so well that I was afraid to even touch them with the stone. Now, a question that naturally came to my mind was, What had I done to cause such a marked change? You must remember that I had not attempted to get the cutting edges even, but simply to hack them off, so to speak, leaving them rough and uneven. It was that I had done in a short time what Nature is years in accomplishing,—that is, wearing the teeth. It simply made the teeth harmonize with the age of the patient more than before.

After noticing this I took pains to examine natural teeth as well as those of casts, and to my surprise I found that in most cases of patients having reached the age of twenty years there was a wearing of the teeth more or less according to the age of the person. I would like every one of you to notice and see if this is not so. You might observe the different ways that I have ground these and the various effects that have been produced by so doing.

Figs. 1, 2, and 3 (see illustrations) are identical in form, being taken from the stock of S. S. White, mould 62. I do not think that any one of you would say that they were originally of the same form, being so different in character. You see that by grinding each tooth a little different from its fellow that awful sameness is broken up; that is, each tooth is given a certain amount of character and individuality.

We will now turn to the charts, and I will endeavor to explain what I have been reading about. As I was just reading, Figs. 1,

FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.



2, and 3 were made from the identical mould, and I venture to say that I do not think that an ordinary observer would mistrust that they were the same teeth, so far as the form goes, as they differ so in character.

Fig. 1 is a graceful case. Notice that all the curves are even and in harmony with each other. There is no irregularity in the alignment of the teeth to break up the artificiality. I have tried to do it merely by grinding each tooth a little different from its fellow, adding individuality. Notice that the cutting edge of one central is slightly concaved, while the general shape of the cutting edge of its mate is convex. Observe also that these teeth vary slightly in their approximal surfaces. I have ground the edges of the laterals and cuspids as well. You notice a great deal can be accomplished towards breaking up the artificiality by making these slight variations; that is, the hard, set appearance is destroyed.

Fig. 2, you will observe, is not so graceful as Fig. 1, and that the teeth are ground in a little different manner. There is a squareness given to the approximal surfaces of the centrals, also the cutting edges of the teeth are ground in shorter curves.

We will now take up Fig. 3, which I consider is fully as natural as the two preceding ones. Notice that the symmetry is entirely wanting; take for example the centrals. See that they differ in length, also the slightly uneven grinding on the cutting edges. The difference between the laterals is quite marked. Notice that the right one is worn much more than its mate, which is worn scarcely any, as it does not come in occlusion with the lower teeth. See the variation in the cuspids. Notice how the right one is represented as having much more work to do than its fellow, as shown by its extensive wearing, which is represented better in the next chart. Also notice how the strike has forced it up, and that its general direction differs from the left. Of course, in a case like this we will assume that the lower teeth are somewhat irregular to produce these results.

Fig. 4 represents the three cases that I have just been talking about in a relative way. The first or top case is one, the middle, the third, and the lower one, case two. We will take the cuspids first. In the upper set there has been scarcely any grinding at all, while in the middle one there is considerable, the distal half of the cutting edge being ground to represent a regular facet made by the occlusion with the lower teeth, while in the lower case we

have ground about as much as the first, although in a little different manner. Also notice the alterations in the laterals.

While I am on the subject of the cutting edge it might be well for me to explain the rest of the cases from this stand-point.

We now come to Fig. 5, which represents an upper and lower denture for a man of about thirty-five years of age, in occlusion. He is supposed to be a large, strong, wiry sort of fellow, with powerful angular jaws. I have tried to make the teeth harmonize with this type of face. We will see how I have treated the cutting edges to carry out these lines. There is a general idea of squareness given to the cutting edges which brings out the angularity. See that the cutting edges are about on the same plane, also that the mesial angles of the centrals and especially the laterals are quite sharp, which enhances the angularity. Possibly by comparing this and the next chart, Fig. 6, these ideas may be shown by contrast, as this is for a mild, easy-going sort of person. See how the mesial corners of the laterals are rounded, which gives mildness to the case. Passing to the lower set of Fig. 5, notice that there is the same straightness across the cutting edges, which is in keeping with the principle of angularity. Notice that the edges are not ground square across, but chiselled from before backward, as they would be in nature from their sliding against the lingual surfaces of the upper teeth. In this illustration the mouth is represented as being slightly opened, so that the cutting edges of the lower teeth can be seen.

Fig. 6, as I have already said, is for an easy-going sort of fellow, but a somewhat older person than figures in the preceding case, say about fifty years of age. Notice that the general tone of the case shows mildness and deliberation, while the preceding case shows strength and angularity. I think that the principal difference is represented in the way that I have treated the cutting edges. I have also attempted to demonstrate another feature in this case, and that is the action of acid saliva on the cutting edges combined with wear. We all know that if the dentine is exposed to slightly acid saliva it will be attacked quicker than the enamel. The result is that when the dentine between the two plates of enamel is exposed by wear, it would be eaten away, so to speak, leaving the two walls of enamel unsupported, which by constant use will become chipped, giving a ragged, eaten appearance to the cutting edges, and that is what I have tried to show in this case, especially so in the centrals.

FIG. 6.



FIG. 7.



FIG. 8.

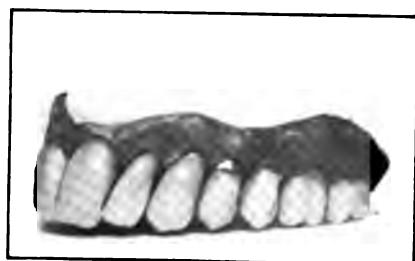




FIG. 9.

FIG. 10.



FIG. 11.



Fig. 7 does not present any feature that I have not already tried to explain unless it is what we might call the "thread tooth." In spite of what we can do some of our women patients will bite threads, the result being that the enamel of one or more teeth will become nicked. I have observed that the left lateral and cuspid suffer most often, as shown in Fig. 8 by the slight nicking of these teeth. There is also the same wearing on the cutting edges that, no doubt, by this time is beginning to wear on you, as I have said so much about it.

Fig. 9 is supposed to represent a denture for an elderly gentleman of about sixty years of age, which, as you will expect, shows the effects of the occlusion perhaps more than any other case that I have here. Not only do the cutting edges show the wearing, but the cusps of the bicuspid and molars have almost entirely disappeared.

Figs. 12 and 13 are photographs taken directly from nature. They appeared in a series of faces shown in the January issue of the *Dental Cosmos*. As these are absolutely true to nature I do not consider that I have been wasting time talking about grinding the cutting edges.

Fig. 12 represents the face of a man of about fifty-nine years of age. The lower teeth are abraded nearly one-half their length. The dentine, which is exposed, has become much stained by the use of tobacco.

Fig. 13 represents the face of a woman of about seventy-one years of age. The upper and lower teeth are natural excepting the upper left central, lateral, cuspid, and bicuspid, which I should consider was a piece of bridge-work. These artificial teeth are about as they came from the stock, so far as the cutting edges go; that is, they have not been ground to show the wearing. I will cover all the natural teeth, leaving the artificial ones exposed. Now I will cover the artificial ones, leaving the natural teeth exposed to view. I think that you will all be surprised with the effect,—that is, how much relation there is between the facial and dental harmony. I do not want you, gentlemen, to think that I am criticising this bridge-work, because, no doubt, at the time that it was made the natural teeth were worn scarcely at all, and I have no doubt that at that time there was better harmony between the artificial and the natural teeth.

In grinding that same set that I have just mentioned,—that is,

the one that I made when a student,—I did something else to improve the appearance. The teeth were too light in color at the tips. Now, by grinding this off, it resulted in improving the color, making it harmonize also with the age of the patient. One great trouble with dentists is that they get the teeth too white to fit elderly patients, and it is just this class of people that we have to supply dentures for most often. I would like to impress the following points on every one of you here this evening: *That the teeth age with the patient both in wearing and in color, and it is by imitating nature in these two respects that the key-note of success, artistically, in artificial work is reached.*

As a person advances in life it is shown in various ways. We all know that the hair either comes out or turns gray. The skin becomes wrinkled. There is even a change in the color of the skin. Now, why do not the teeth show this aging? That is just what they do. To place white teeth in the mouth of an elderly woman would be the same as putting a wig on her made for a woman of twenty years of age. You can imagine how it would look,—out of place and false; just the same as the teeth for a woman of twenty would look in her mouth. The reason why they would look false is because there is a lack of harmony between the age of the patient and the apparent age of the teeth.

We now come to another important consideration,—namely, the festooning of the gum line, which plays a very important part in the general effect of the case. This must, of course, harmonize with the rest of the work. If the lines of the teeth are even and graceful, so must the gum line be. If it is for a rugged, strong man, the gum line must follow being rugged and strong, or the character of the case is lost. For a lazy, sluggish, lymphatic person the gum line wants to be low and fiat.

Here is another place where the sameness of the teeth can be broken up as by grinding,—that is, in varying the festoon. We can also age the teeth by making them somewhat, what we call, “necky,” by making a recession of the gum that we so often see with advancing age. It is for this reason that the manufacturers have some moulds made with long necks.

We will now turn to the charts again, and I will endeavor to explain what I have been reading about the gum line. Take Fig. 1, which shows a well-balanced case. Notice that the festoons are even, graceful curves, and in harmony with the general lines of

FIG. 12.



FIG. 13.



the teeth. In Fig. 2 we see that the gum line is less graceful. Fig. 3 shows how we can break up the monotony in the appearance of our work by varying the gum line as we did the cutting edges. See that the left central is somewhat shorter than its mate; also that the gum line is a broken curve. There is a difference in the festoons over the cuspids. No doubt, now that I have mentioned these variations, you may think that I have been exaggerating them in this case, but taking the case as a whole I do not consider that I have.

Notice how in Fig. 5 I have tried to bring out the strength and angularity of the case by the gum line, since it is for a strong, angular, square-jawed man. See that, instead of the line having general curves, it is made up of short straight lines, which are well shown over the upper anterior teeth. Notice also that the length of the cuspids is increased by the height of the festoons, which adds strength.

In the lower set much character is given the otherwise plain case by the gum line alone. Over, or rather under, the centrals the line is lower than at the laterals. Then, when we come to the cuspids there is a decided drop. Now, by covering the gum line with the pointer we will notice how it weakens the case, and by uncovering the gums the strength returns. At the same time these slight variations help to break up the monotony of the case.

There are no new features in the next case, shown in Fig. 6, but notice that there is harmony between the cutting edges of the teeth and the gum line; that is, they both go to produce mildness.

In Fig. 7 I have shown a recession of the gum over the left central which we will suppose was caused by vigorous brushing of the teeth. No doubt you all have observed that in most cases where the recession is caused by too much brushing, it is the left side that suffers most, as with a right-handed person it is the easiest side to get at. Also observe that as the teeth are quite long, we have the gum line in keeping with this idea; that the arches of the festoons are high, which point might be brought out more clearly by comparing with the preceding case. In Fig. 9, for the elderly gentleman, the gums are very much receded, giving the appearance of looseness to the teeth.

We now come to the gum itself. For a patient that does not show the gum in talking or laughing it is of little importance; but in those cases where the gum is shown, and it does not har-

monize with the surrounding, the artificiality is at once discovered. In a case of this description the way to do would be to work the gum up carefully in wax and have block teeth carved by hand. In this way the correct arrangement of the teeth can be obtained as well as a natural-looking gum.

Possibly you have noticed the prominences over the roots, especially over the cuspids, showing the cuspid eminence, which gives so much character to the mouth and even to the corner of the nose. Now, if the plate line does not run high and the prominences are not sufficient, there will be a drooping at the angle of the nose. Then, again, a great deal of strength can be shown by making the prominences over the roots pronounced. For a strong and robust person the roots are strong and well developed, as shown in Fig. 5.

In the illustrations you will notice that the highest and fullest point of the gum is over the cuspid, to build out the part of the face lost by the extraction of that tooth, which is the most important tooth, from the artistic stand-point at least, on account of the excessive length of its root, which is clearly shown in the photograph of the section of the skull (Fig. 11). We can easily see that when this tooth is extracted not only will the expression of the mouth be effected, but that of the nose as well, as the muscles of expression in this region will be distorted, giving a very unnatural look to the face. This point my father, Dr. H. A. Baker, has called to my attention many times.

I would like to say a little about the temperaments, but do not want to take up much of your time, as this can be found in detail in the text-books. I will give enough so that you can better appreciate the cases that I have here this evening, for no one can be successful in this work unless he thoroughly understands the divisions of temperament and can recognize them when he sees them.

I have only one or two cases that would be called pure types. The nervous is the most typical, which is shown in Figs. 7 and 8; the sanguineous, Fig. 1, is also quite good. The salient points regarding the temperaments are that we are classified according to our characteristics into the sanguineous, bilious, nervous, and lymphatic types and their various combinations.

The characteristic features of the teeth of the sanguineous temperament are that they are well proportioned, abounding in curves, with rounded outlines and well-proportioned cusps. The color is of a creamy yellow inclined to translucency. In the bilious tem-

perament the teeth are large and inclined to angularity, rather long in proportion to the breadth, the color being a pronounced bronze yellow. In the nervous type, length predominates over breadth, abounding in very graceful curves with fine, long cutting edges and cusps, the color being pearl-blue or gray inclined to transparency. The lymphatic temperament is the complete opposite of this, as the teeth are large, unshapely, very broad cusps and poorly defined, the color being pallid, opaque, or muddy.

We have thus far studied the cases in parts; we will put these together and consider the effect of the cases as a whole. I trust that you will excuse me if I repeat a great deal of what I have already said.

CASE 1. For a man of about thirty years of age having somewhat of a sanguineous temperament. The general impression of the case is graceful. Note there is some wear on the cutting edges of the anterior teeth, especially the centrals; one is slightly concave, while the other is convex, as I have already explained on the chart, breaking up that sameness that is so liable to enter into this work. See that the gum margin is graceful and in harmony with the rest of the case and that the color is of a creamy yellow. This case as well as the two following are made from mould 62, S. S. White.

CASE 2. Made from the same mould as Case 1, but notice that the character is entirely different, showing that it is not the manufacturers that are wholly to blame for the sameness of our work. Notice the effect produced by grinding the cutting edges,—that they differ entirely from Case 1. Also observe the slight elongation of the centrals, the shape of the gum line, and contrast it with the preceding case. This is for a man of about thirty to thirty-five years of age, of a somewhat sanguo-bilious temperament, the color being dark yellow.

Case 3 I really do not know just how to classify, but I should say that the bilio-lymphatic temperament predominated. The case is supposed to be for a man with strong jaws, but of a different type from Case 4, as that was for angularity, while this is for a more corpulent person.

CASE 4 (shown in Fig. 5). For a man of about thirty-five years of age of a bilious temperament, having a strong, angular build. Observe how the general effects of the case carry out that idea. There is just enough grinding on the cutting edges of the teeth

for the age of the patient considering the density and hardness of the teeth. I might stop to say that a great deal of wearing depends upon the quality of the teeth and the chemical reaction of the saliva, as will be shown in the next case. See that the artificiality is broken up by the slight lapping of the superior laterals over the centrals, and that the cutting edges are about on the same plane. Observe that the gum line differs from the preceding cases, it being more angular. In the lower there is a slight lapping of the anterior teeth, also the cutting edges are worn not flat, but chiselled from the fore backward as we find them in nature. Notice that the festoons of the lower cuspids are much lower than the other festoons, giving character to the otherwise plain case. The mould is 181, S. S. White.

CASE 5 (Fig. 6). For a man of about fifty years of age of a sanguo-lymphatic temperament. The character of this case is in the grinding of the cutting edges of the anterior teeth to show the effects of acid saliva combined with wear. Observe that they are ground to give the appearance of their being somewhat uneven and ragged. You see that the prominences over the roots are very slightly developed. There is a slight space between the centrals; the mesial corners of the laterals are rounded, which is not especially graceful, but often met with in nature, especially for a person of this type, adding mildness to the case. The color is of a muddy yellow. The mould is 35, S. S. White.

CASE 6 (Figs. 7 and 8). This is a typical nervous type for a woman about forty years of age. She is supposed to be one of those highly organized, angular-featured woman, one whose face is narrow and sharp. Now notice how characteristic the denture is for a person of this description. See that the arch is quite pointed, with a general pitching forward and crowding of the teeth. Notice that the festooning is in harmony with the idea of the case. Additional character is given by replacing the smaller centrals of the set by much larger ones. Observe that the fillings are where they would occur in nature. The left first bicuspid is supposed to be a banded crown. The color of the teeth is a bluish gray. By comparing the difference between this and the preceding case, I think that you will see the amount of character that can be given by the teeth, and that what I have said about the harmony of the facial and dental lines is true. This case is made from mould 100, S. S. White.

Case 7 (shown in Fig. 9) is a lower denture for an elderly gentleman who has been used to high living. See that the teeth are somewhat irregular, but not enough so to attract attention. Notice how the age of the case is shown by the extensive grinding on the cutting edges. See the length of the teeth and how the gums have shrunk away from the necks. Also observe that the gums are somewhat puffy and give the appearance of being inflamed and gorged with blood.

I consider that I was complimented the other day on this case, for when a friend, who is a dentist, was in the office and examined it, he remarked, "You had better hurry up and give this paper before the old fellow dies of age." This pleased me, because it was the idea of age that I was striving for in this case. The mould is 40, S. S. White.

There is one more point that almost slipped my mind, and that is about the use of stains. Dr. A. H. Parker, who does some very artistic work in this direction, gave me my first ideas on this subject.

One of the troubles with stock teeth for partial work is that it is almost impossible to get the color. The general color may be good, but to get some of the gradations that we find in nature is, I think, almost impossible. If one, however, is expert with the use of stains, his work will be much more satisfactory in appearance. We can imitate the teeth that have a mottled color. Then we sometimes find them with spots of a lighter shade than the general color. I think, however, that the most pleasing work in staining is to reproduce the tobacco stains that we find on the teeth of inveterate smokers. It is almost impossible to get a natural effect in partial work in one of these mouths unless we resort to the staining, for the artificial teeth will be so conspicuous that the eye will detect them at once. Now, by copying the tobacco stains on the remaining natural teeth the artificiality will escape unnoticed. I am, of course, referring only to those cases where the teeth are exposed to view. I myself do not consider that it is really necessary to be so particular as to staining the posterior teeth unless they show under certain conditions. The photograph (Fig. 10) that I have here gives but a very poor idea of the staining, which shows much better in the specimens that are being passed around.

I believe that this is about all that I have to offer this evening,

gentlemen. I feel that I have only just begun this work, and there is no doubt but that after a few more years of study I will be ashamed of what I have said to-night.

I trust that you appreciate the fact that I have presented only seven or eight different cases, and that it would be impossible for me to do justice to so large a subject with such a small amount of material.

I feel sure that during the discussion there will be many points brought up that I have not touched upon at all. I wish to thank you, gentlemen, for your kind attention to me this evening.

SCIENCE AS A TEACHER OF PROPHYLAXIS.¹

BY SAMUEL A. HOPKINS, M.D., D.D.S., BOSTON, MASS.

MR. PRESIDENT AND MEMBERS OF THE INSTITUTE OF STOMATOLOGY,—I am obliged to ask your indulgence for a few minutes while I review briefly a paper which I had the honor of reading before the Massachusetts Dental Society, at its annual meeting, held in Boston early last June.

The paper which I am about to read is a continuation of the one read at that meeting; and as that one has not yet appeared in print, and as it is necessary to the understanding of this paper that you should have some idea of the other, I will give you as briefly as possible a rough outline of some of the statements it contained.

I called attention to the remarkable mechanical and manipulative skill which our profession had attained, and expressed the belief that operative treatment could go no farther. Without decrying the immense good to humanity that such skill had wrought, I hinted that, with such remarkable facility for replacing lost teeth and repairing diseased ones at our command, both patient and dentist were taking chances with the natural organs that they would never dare take if no mechanical substitutes

¹ Second paper. Read before The New York Institute of Stomatology, October 1, 1901. Copyright, 1902, by Samuel A. Hopkins, M.D., D.D.S., Boston, Mass.

were known. If our work of restoration were less successful, our efforts to prevent the loss of teeth would be more vigorous and emphatic.

I suggested that, in carrying on a warfare against dental caries, we must begin with the child at a very early age. In our own minds we must place the highest possible value upon the natural teeth, free ourselves from all thought of mechanical substitutes, and fight the battle as if the loss of a tooth were irreparable.

I spoke of Miller's theory as a practical working basis upon which to build up a system of treatment for carious teeth, and I drew attention to the theory of gelatin plaques as explaining some of the more obscure workings of Miller's theory. I showed that acid-producing bacteria, which we have come to accept as the destructive agents in the first stages of caries, do not receive their nutrition from the teeth themselves, but chiefly from particles of starchy and saccharine food found in the mouth.

I quoted the results of experiments which I had made to show that saliva varied as a culture medium, and I drew attention to the fact that bacteria would multiply much more rapidly in the thick, ropy saliva which we sometimes observe, than in the clear, watery fluid which we have come to look upon as the normal secretion of a healthy mouth.

I pointed out what I believed to be a marked association between this thick viscid saliva and rapidly progressing caries; but I regret to say that I was unable to state with any degree of certainty what caused the physiological change which gave rise to this condition of viscosity. I went on to state that so-called gelatin plaques were found more frequently and were more widely distributed in mouths containing this thick, mucus-laden saliva than in mouths in which the secretions were normal.

I stated that in producing decay artificially in the laboratory the greatest possible differences existed in the resisting power of the teeth used in such experiments. From this fact, as well as from the clinical experience of many careful observers, I was forced to conclude that living teeth differ materially in their susceptibility to and immunity from the action of caries. I also stated that caries was more easily produced by mixed cultures than by a pure culture of any of the lactic-acid-producing bacteria.

This, together with a tribute to Dr. D. D. Smith, of Philadelphia, for the courageous enforcement of his convictions in the

prophylactic treatment of teeth, was the substance of the paper of which this is a continuation.

I wish now to call attention to other causes which tend to further the deterioration and destruction of human teeth. I shall point out some of the evil consequences of this retrograde metamorphosis, and shall offer a few suggestions as to the best means of working our way up to a better condition of the organs of mastication.

Whatever theories we may invent to explain the causes of dental caries, one fact stands out clearly and cannot be controverted,—namely, that caries is practically unknown among uncivilized races, and that degeneration of tooth-structure follows civilization like a Nemesis. Sometimes the changes which follow contact with civilization are so marked and so rapid that they seem almost like an epidemic. More frequently, however, the change is slow, working gradually, but insidiously and surely through long generations, until we wonder if this is, indeed, a process of evolution against which it is useless to strive. We must not forget, however, that evolution in the human race differs from that in the lower animals in this, that it is within the power of our intelligence to control it. Thought is supreme, and if we want good teeth, and want them badly enough, good teeth will be evolved to supply our needs and our desires. It is for us to say whether the human race shall become an edentulous race, or whether it is worth while to combat the degeneracy already begun and swing the huge pendulum the other way by eradicating disease and improving the structure of the human teeth.

This degeneracy is, as you well know, largely brought about by a loss of functional activity due largely to our civilized methods of preparing food. We resent with indignation food that necessitates vigorous mastication, and we allow our children to wash down their meals with copious draughts of water. Nature resents such treatment, and refuses to supply the necessary pabulum for maintaining a neglected organ. To functional activity she responds at once. When an organ is vigorously used waste material is taken up and active nutrition takes the place of stagnation. You might just as well confine an arm in a plaster-of-Paris cast, and expect it to retain its strength, as to deprive the teeth of the exercise of mastication and expect them to continue strong and well.

It is probable that the intensity of our modern life—the fearful

nerve and brain tension that we are almost constantly under—has much to do with the degeneracy of our teeth. We note clinically a marked effect on the structure of teeth following an illness involving the nervous system, and we are familiar with the transparent, blue, rapidly decaying teeth of the highly wrought, intense nervous child. This burning up of the vital forces by excessive nervous and mental strain must be accepted as a factor in accounting for the deterioration of our teeth.

It is not improbable that the immediate cause of caries, which we believe to be acid-producing bacteria, is more active to-day than formerly, because of the too bountiful supply of starchy and saccharine food which enters the mouth. This food serves as a medium for bacterial activity. It is pointed out by Röse, as a result of experiments carried on in Baden and Thuringia, that the amount of calcium taken in through the food and water supply must be recognized as a factor in explaining the liability of teeth to carious action. This is probably true also as applied to the prenatal development of teeth. Another important factor in bringing about caries is so well recognized that I must apologize for mentioning it. I refer to irregularities. Irregularities may be due to the narrowing of the modern jaw, to the mixing of racial types, to faulty eruption of the permanent teeth, to adenoid growths, thumb-sucking, mouth-breathing, or to other causes. Whatever throws a tooth out of line and produces a lack of symmetry in the beautiful curve of the dental arch makes it difficult to properly cleanse the teeth. Whatever produces a faulty articulation makes it well-nigh impossible to keep up proper functional activity. A tooth without an antagonist is bound to deteriorate.

Besides these causes there are others which may be looked upon as accidental or at least as occasional, such as congenital imperfections, prolonged illness, pregnancy, chemical agents, and traumatism, but time will hardly permit of a consideration of these causes. There is, however, one other consideration that we must refer to in this connection. Dr. Michaels, of Paris, in his work on Sialo-Semeiology, says, "The saliva of adolescence contains a dextrinic principle (glycogen) susceptible of fermentation under the influence of ptyalin in the presence of earthy salts. In this way is obtained the dissolution of the earthy salts by the substitution of lactic acid for carbonic acid." If this statement means anything, it means that lactic acid is formed in the mouth without

the aid of bacteria, and that lactic acid so formed is capable of attacking the teeth and destroying them. Since reading Dr. Michael's article I have sterilized and examined the saliva of a large number of children, and have in no instance been able to discover a trace of lactic acid that was not to be ascribed to acid-producing bacteria. While I have long believed that certain conditions of the saliva promoted carious action, I am equally sure that this is due to the fact that under certain conditions the saliva becomes a better culture medium and thus favors the increase of acid-producing bacteria. If it is true, as Dr. Michaels asserts, that lactic acid can be produced in the mouths of young people without the aid of bacteria, it is probably true also that the cases in which this change takes place are too infrequent to have any especial bearing on the subject we are now considering.

Having touched briefly upon the causes which assist in bringing about degeneration and loss of teeth, and before taking up the evil effects produced by diseases of these organs, let us pause a moment to consider how wide spread the evil really is.

Dr. Denison Pedley, of England, made some interesting studies of the teeth of school children in that country, and found that seventy-five per cent. of the children examined had diseased teeth. This is a low estimate as compared with the condition on the continent of Europe and in this country. Statistics indicate that nearly ninety-seven per cent. of all our public school children have carious teeth. It is not too much to say that thirty per cent. of all the teeth of school children between the ages of five and fifteen in the public schools of this country are diseased. This is appalling when we know that only a small proportion of these children will ever receive treatment at the hands of a competent dentist; and when we realize that without such treatment they must inevitably go from bad to worse, the situation becomes truly alarming. It is rendered more striking when we realize that in spite of unhygienic surroundings only two and a half per cent. of the Eskimos have carious teeth; while the Indian and Malay tribes, having been smirched, but not yet conquered, by civilization, still dwell in comparative ignorance of caries, only ten per cent. of their number being as yet afflicted.

It is not necessary to dwell on these facts to show what a menace to health and to mental and moral progress we have confronting us. Many of these unfortunate school children suffer with inter-

mittent toothache for years; and thanking God for the intermissions, they bravely accept the condition as a part of their lives. What sort of mental and moral development can go on when opposed by such a handicap; and what an effect upon the child's health and physical development must such a condition bring about! I tell you, gentlemen, that physical and moral degeneracy, idleness, and crime may have a more intimate association with caries than we are quite willing to admit. To emphasize the necessity of a reformation in our care of the teeth, let us consider for a few minutes the relation of diseases of the dental organs to general diseases.

Three years ago Dr. Charles Stedman Bull, speaking before this society, pointed out the connection between diseases of the eye and dental lesions, in a paper so able that it attracted the attention of the medical profession throughout the country. Without now going into details, you may remember that he proved conclusively that keratitis, glaucoma, muscular paralysis, asthenopia, amblyopia without visible lesions, supraorbital neuralgia, and exophthalmos with and without cellulitis are frequently caused directly or indirectly by carious teeth. He showed that eye-complications of dental disease are of varied nature and may reach to the most superficial structures of the eye. He spoke most positively when he said that when we come to consider the lesions of the cornea and sclera, the cases reported in connection with diseased teeth are almost numberless. Cases of loss of accommodation from paralysis of the ciliary muscles have been shown to be in many instances due to diseased teeth, and optic neuritis ending in atrophy of the nerve and blindness has also been traced to carious teeth. This excellent paper of Dr. Bull's was printed in the *INTERNATIONAL DENTAL JOURNAL* of March, 1898, and will well repay careful perusal.

We are perfectly familiar with diseases of the nasal and accessory cavities which have their origin in dental lesions. We have too often witnessed antrum and aural disturbances dependent upon carious teeth not to fully appreciate the intimate relationship between these parts. It is a well-established fact that otalgia of a very pronounced type not infrequently arises from a carious tooth. Nervous interference with the nutrition of the middle ear may be due to dental disorders, and may cause impairment of hearing. In fact, when we consider the reflex disturbances due to diseases of the teeth we are at a loss for space to enumerate them.

When it comes to diseases of bacterial origin, we find that with few exceptions all bacteria find their way into the general system through the mouth. I have myself found the tubercle bacillus, the Klebs-Löffler bacillus, actinomycosis, and many pyogenic forms in mouths of supposedly healthy people. A correspondent of *La Revue Médicale* for May, 1896, reported one hundred and thirteen cases of lymphadenoma in children. In forty-one per cent. dental caries was the only cause that could be found, and it is fair to infer that in a much larger percentage complications of caries were present. Chronic glandular swellings in the neck are dependent upon caries in a majority of instances. It has been found in several cases of tuberculous infection that the bacillus invaded the organism through a decayed tooth. Many cases are reported to show that primary tuberculosis of the mouth, which happily is not very common, generally shows itself first around a diseased tooth or root. General infections of septicæmia followed by death are frequently reported, and in far too many cases these have their origin in a diseased tooth. Numerous cases of pyæmia, periostitis, otitis, and metastatic abscesses resulting in death have been shown to have originated in carious teeth. When we come to consider gastric troubles, the number proceeding from imperfect mastication caused by a neglected or diseased condition of the mouth and teeth far exceeds those from all other causes put together.

I could go on multiplying indefinitely these cases in which general disease is dependent upon dental lesions, but I have, I think, said enough to show that our professional work can no longer be confined to its present narrow limits, but that we must face broader and more important questions than now occupy our minds, if we are to make a permanent and useful impression upon the human race.

The question immediately arises, Is it worth while? We are doing our work in a comfortable way, showing more or less skill, and, it cannot be denied, doing more or less good; and we have a comfortable income. Why excite ourselves about the rest of the world? Well, of course, if we are content to eat, drink, marry, and die, it is not worth while; but thank God that is not the kind of men the dental profession is composed of to any great extent! As I said in my first paper, it is one of the few professions in which men are striving to cut off the sources of their income by substituting prevention for cure. It is a profession that

has had from its beginning the welfare of the patient at heart and has striven earnestly for the improvement of the human race. Scamps and charlatans belong to all trades and professions, but the proportion is comparatively small in the dental profession. The work is too hard and too exacting, and the dishonest and loose-fibred man can do better in some other walk of life. Therefore I feel that it is only necessary to show that this work of preventing caries is feasible, that it is important to the improvement of the human race, and that a fair degree of success awaits our efforts to have every honest member of the profession do his part in bringing about the desired reformation.

When I make the assertion that the development of the dental organs and the strength of the same is and will always be in ratio to their use; when I assert that lack of use will infallibly tend to weaken and to the suppression of these organs, I am simply stating a well-known scientific principle, and do not wish to be misunderstood. I do not know what the intention of the Almighty is in regard to the future of the human race, and I do not believe any one else knows. If we conscientiously believe that in the process of evolution the teeth are doomed; that it is fruitless to waste our time in combating the degeneracy that has already obtained so strong a foothold, it is our duty to help on the process by wholesale extraction, so that we may at least have clean gums and clean mouths and lessen thereby the danger of that general infection which I have shown to be associated with diseased teeth.

The thought is repulsive to you, but it is not illogical. As a matter of fact, strong teeth are associated with and are essential to the best types of manhood. If my statement seems startling I think I can show good grounds for making it. In the first place it has been shown by the examination of the teeth of school children in England, on the continent of Europe, and in this country that there does exist a ratio between the physical soundness and mental acuteness of the child and the condition of his teeth. I am not willing to pervert facts by saying that this ratio is very pronounced, but I firmly believe that it will be more emphatically shown when the investigations have been carried farther. The child with strong teeth will be found to have decidedly the best of it, both physically and mentally, and that he will be morally stronger will follow as a matter of course. As the age of the child advances the difference seems to be more marked, and when we

reach the age when in this country boys enter college, the fact begins to be established in a remarkable degree.

It has been my fortune to have had for patients a very large number of college students, and my interest in college sports has brought me into intimate relations with the trainers, coaches, and captains of crews and teams. In this way I have had opportunity to examine the mouths of a large number of the members of "Varsity" crews and foot-ball teams, and of other college athletes. I have naturally been led to make inquiries of other dentists regarding this class of men, and have also gained a great deal of information from trainers and others interested in college athletics. I have not been able to classify and tabulate the results of my examinations, for in most cases such an examination would be hasty and casual,—usually made in the dressing-room before or after an afternoon's practice,—but the results are striking. The proportion of strong sets of teeth among these young men is greatly above the average, and can be seen in the most superficial examination.

I cannot deny that great intellectuality is often seen in association with weak teeth, nor can it be denied that men of large physique frequently have poor teeth, but that combination of vital energy and mental strength which goes to make commanders and vigorous pioneers is rarely found in association with frail teeth. Our beloved Washington was one of the rare exceptions. If it is true, then, that deterioration of the dental organs will cause a general deterioration in the human race, our duty is plain, and we are bound to apply our energies to combating this great evil. In my last paper,¹ which you can read at your leisure if the subject interests you, I marked out a line of treatment which will, I am persuaded, prevent a large percentage of decay and will carry a child through life without a large filling or other serious operation. Without repeating myself, it is sufficient to say that the plan consists in frequent examinations and frequent polishings. Once or twice in our professional lives we meet with a conscientious mother who insists upon having her child's teeth taken care of. If there is a speck or shadow on the infant teeth, in she comes and demands an appointment. She pesters us with questions as to the care of the child's teeth, and insists upon our making the most minute

¹ Dental Cosmos, October, 1901.

examinations and doing the most careful polishing. She makes life a burden to us by her insistence, and we are almost ashamed to make a charge for the slight and seemingly unnecessary operations which we perform. But what is the result? If a spot is discovered which marks the first step of caries, we polish and polish until it disappears, and no cavity results. The teeth strengthen, and we find that when the child grows up the teeth are strong and only a few small fillings have ever been inserted. We give ourselves small credit for this result, and in our blindness believe that the child's teeth were naturally strong and resistant to decay, when, as a matter of fact, our own efforts, called forth by one of those God-given mothers, have produced this wonderful result. Did you ever know any other result in such a case? Is it not almost inevitable that such a child will have excellent teeth? It is only necessary to apply this same treatment to all children to have uniformly strong and healthy teeth.

We ought to take the initiative, and not wait to be prodded into doing our duty. It is for us to educate the mother about the care of the mouth. We should point out the importance of proper mastication and show how suicidal it is to allow the little ones to wash down each mouthful with water. It is within our province to inquire into the feeding of the child and to make suggestions on this subject, and I can assure you that in most cases these suggestions will be received with gratitude and the attempt will be made to improve the faulty diet. I have very little faith in the practice of feeding special foods for a special purpose, because we know so little of the marvellous chemistry of digestion and assimilation that we cannot follow the food to its ulterior depository, and the phosphates that we feed to nourish the brain may, for aught we know, find their final resting-place in the joint of a big toe. We do know, however, that certain foods are insufficient to nourish certain organs; that finely bolted flour, for instance, will not build up tooth-structure, while whole wheat contains the nutrient ingredients.

With the knowledge we have of the means of prevention, with the readiness with which our views are accepted by our patients, there should be little or no trouble in reducing caries to a minimum in private practice. Three-fifths of the dental operations performed in the last twenty years were preventable. Will it be possible to make that statement at the end of the next twenty years, or shall

we have succeeded in reducing that proportion? I have not spoken of brushing the teeth nor of the use of washes, for I have nothing to say that you do not already understand. There is, however, another important aspect to this question which we must consider, and that is the condition of the teeth of the poorer classes.

Poor teeth cause poor digestion. Irritability of the stomach produces a craving for alcohol, and alcohol causes crime. Ergo, unhealthy teeth lead to unhealthy morals. This may sound like the Darwinian theorem which demonstrates that the old maids of England are the cause of her vigorous manhood. The bone and muscle of Englishmen is derived from the excellent quality of the English beef and mutton. These fine cattle and sheep feed chiefly upon clover. The clover is fecundated by bees that carry the pollen from one plant to the other. Field-mice are the enemies of bees and destroy their nests. Cats are the enemies of field-mice and destroy them, and the old maids care for the cats and encourage their increase, and hence are the cause of the strength of the men. It is an interesting chain, but no such roundabout method of reasoning is needed to show that the proper conservation of the teeth is essential to health and happiness. So far as the well-to-do classes are concerned, I believe that the tide has already turned, and that the effect of prophylaxis is beginning to be felt, but the question of what we shall do for the teeth of the poor calls for our most thoughtful and prayerful consideration.

In the economy of human life the teeth are of no less importance than eyes, ears, throat, lungs, spine, or any other portion of our anatomy. But while for diseases of every other part of the body free hospitals and dispensaries offer to the poor every facility for treatment, there is not, to my knowledge, throughout the length and breadth of this land, a single place where a person unable to pay a fee can have the tortures of an aching tooth assuaged by competent hands. I do not forget the excellent work done in our college dispensaries, but that, as you know, is so small in amount compared to the great need of such work that it only points out more emphatically the need of free dispensaries for the poor. While we are trying to influence legislation, and are bringing this matter to the favorable notice of State and city governments, there should be little difficulty in getting a private endowment for one or two such institutions. There are ten or a dozen men before me to-night who could each raise fifty or a hundred thousand

dollars among his own patients for such an object as this. These institutions, started perhaps by private means, would soon demonstrate that from economic motives their existence and usefulness should be maintained. The decrease of crime, the lessening of disease, the improvement in physical and mental conditions would be soon remarked, and these institutions would form an important part of our public education by teaching oral hygiene. That there would at first be opposition springing from the ignorance of the poor there is no doubt. They have an exaggerated dread of all dental operations. This would be soon overcome if the dispensaries were in the hands of wise and kindly men. Good teeth should be made a prerequisite for attendance in our public schools, just as vaccination is required at the present time. To bring about these changes we must gain the co-operation of medical men, and this we can do in a large measure through our personal acquaintance. We must influence the instructors in our dental schools so that this subject may occupy a more prominent place in the college curriculum. Dental sanitation should occupy a large space in our books on hygiene and in our dental and medical literature, and, most important of all, our dental societies should become interested and take the initial step in starting this important reformation. And that is what I am here for to-night. My convictions are from long and earnest study, and I have drawn no chimerical picture of the needs of our race; nor do I believe that if we give our hearts and our hands to the work of improvement, the undertaking will be found beyond our strength.

PROFESSIONAL HONESTY AND DECISION OF CHARACTER IN THE PRACTICE OF DENTISTRY.¹

BY DR. N. G. CARROLL, NORTH CAROLINA.

In dental practice there are many small attentions, apparently trifling in themselves, that impress your patients with your care and consideration for their comfort, and, as far as the eye can influence, they are assured of cleanliness and neatness of operating. I refer

¹Read before the North Carolina State Dental Association, June, 1901.

principally to the essentials of proper personal appearance, clean office and instruments, which are often accepted as indicative of the character of a practitioner. But I wish to go back of this and throw out a few hints as to "Professional Honesty and Decision of Character in the Practice of Dentistry." As you follow me along, bear in mind "honor and glory" are not nourishing, but to the true professional man dearer than wealth.

As our guide, let us choose the motto, "The best Capital is Character."

I suggest this guide because it is an unselfish one. It will tell you every dentist has two reputations,—one among his professional brethren and one with the public. Character is one of the greatest motive powers in the world. In its noblest embodiments, it exemplifies human nature in its highest forms, for it exhibits man at his best. Men of honor and character are the conscience of the society or profession to which they belong. Martin Luther said, "The prosperity of a country depends, not on the abundance of its revenues, nor on the strength of its fortifications, nor on the beauty of its public buildings; but it consists in the number of its cultivated citizens, in its men of education, enlightenment, honor, and character; here are to be found its true interests, its chief strength, its real power." The practice of dentistry is one of the most noble callings of this advanced age, and yet I know of no other calling or vocation of which the outside world or people in general have so limited a knowledge as to its detail and minute practice and operations. It may be safely said that every man who occupies a professional position declares to the world that he possesses as much knowledge and skill as may be necessary for the accomplishment of any operation within the sphere of his calling. This truth applies as well in the law as in common sense. In a trade the article is sought, it can be examined, and its value estimated, while in a profession the public seeks the individual, having confidence in his honesty and ability. Therefore, when a patient seeks or asks for your services, it is a declaration of confidence and trust. Hence, a man who follows the profession should be made of fibre tough enough to stand by principle and maintain the professional honor and decision of character that so nobly, justly, and truly belong to this profession in which providence has placed him. This doing of one's duty embodies the highest ideal of life and character. He will then have served his gifts and profession—*not abused them.*

But while our ablest and most energetic members of the profession, our geniuses full of enthusiasm for the progress and advancement of dentistry, are continually advancing and are striving to lead us to a broader sphere of usefulness and to a higher scientific knowledge, and we as a professional body with sincere motives and earnest desire to be useful to our fellow-man and honor to our profession, striving on, falling short in many respects, though possibly doing as well as should be expected; what about the advertising strug-glers, quacks and scabs who shirk the principles of professional honesty and with dormant sense of right and wrong, with stifled conscience and no regard for ethics, but are eager to rush in and push themselves into an injurious prominence. The question of advertising is one that must be decided on entering practice, and often with the young graduate the questions of immediate gain, or future gain, with professional honor and respectability, are trying ones.

The man who is seeking the road to wealth is misdirected when he chooses the dental profession, though the average dentist lives well and comfortably, spends money freely, but dies without attaining great wealth. I hope I am not cynical on the subject of advertising, and I see no objection to a man doing so in a professional manner. To have been heard of, if only once, is a great advantage with the new practitioner, and the young man just entering the profession realizes this fact, and while it is his desire to conduct himself in a professional manner and live up to the code of ethics, he may feel some necessity to bring his name before the public. Should the young man desire to simply advertise his name, calling, and address in some reputable daily or weekly paper which is not used by the quack, I can see no special objection. Such advertisting cannot be expected to yield immediate or direct results; the effect or desire is simply that the community or public become familiar with his name, calling, and address. But be sure and stop with the name and address, do not so much as say "examinations free." While I say there can be no serious objections to this form of advertising, the reputable dentist, feeling there must be a dividing line between him and the incompetent, refuses to advertise at all. The advancement of dentistry has not come through the advertising offices; they are simply parasites, who live on the work of others, pulling them down by deceiving the public; they contribute nothing to the upbuilding or advancement of the profession or the investi-

gation of new problems. The man who advertises a "dental parlor" and superiority over all his professional brethren is to be avoided; likewise, the man who seeks the medium of advertising cheap work through the daily papers and theatre programmes, for if his services were worth more, he could command a higher fee. Distribution of hand-bills, bragging in the daily papers, and classing yourself as a Cheap John will perhaps bring more immediate results, but not a desirable or appreciative patronage, and will in the end be less profitable than a practice conducted on an honorable, a dignified, and professional basis. We should remember that for steady illumination a lamp is better than a rocket, and that it is a lamentable fact that low-priced dentistry is synonymous with cheap and shoddy work. Unfortunately, it seems that this class has flourished and multiplied, and has also grown bolder, more injurious, and more unscrupulous. While the best and highest element of the profession has continued to advance, the lowest element has grown in numbers and descended to lower and more injurious methods. While the present law gives us a board of examiners, which in one sense gives us protection, yet in another sense I think it falls short of its purpose. The board of examiners fill their positions in a creditable way and according to law. I commend their ability but regret their restrictions. A man may pass the necessary examination, as the present law requires a certain knowledge of theory, etc. Here the power of our board ceases. No man is infallible, and so long as this is true, no body of men or examining board can seize or stop every unworthy man who seeks to practise our noble profession. As the law intends that our examining board should protect the public, they should have some authority to withdraw certificates from those who indulge in malpractice, as a license from the board not only gives a man the privilege to practise, but assures the public, in the sense of law, that he is worthy and competent. As the law stands, there is an element of the profession which needs the greatest possible amount of legal supervision, and against which the public stands in the greatest need of protection. There should be adequate legal restriction placed on the grossest malpractice, even though you have a certificate from the State board. I do not mean that you can or any one can enact a law that says any man shall not do cheap work or advertise in newspapers, or on *hand-bills*, but it can protect the public against flagrant malpractice, at any price, or even free of charge. It can say you shall not advertise false statements, nor

can you advertise the same thing under different names and at different prices. It is a mistaken idea with a young man when he enters practice that he is forced to offer some unethical inducement to people to patronize him, and he fails to give value to himself, the profession or others, as he has power to give, when he announces to the public in *heavy type* that his prices are the very lowest and his work the very best to be had. With our largely increased numbers, which must of necessity greatly increase competition, I am sure much good and little harm would have resulted had it not been for the man who claims every virtue in his advertisement and performs but wreck and ruin in his work. Through this method a vast multitude of the human race are slaughtered by deception and incompetency. The fact that he is not in our class professionally, or that our patients seldom go to him, does not help the situation. His advertisements continually injure us all by educating the public mind down to a scale of prices to which no man can adhere, do good work, and make a living *all* at the same time. Such being the condition of a patient's mind, what courses are open to us? Very often, by explaining the facts and the difference between the two operations, we may be able to show our patient that our operation is worth every cent we propose charging, and that it is to their advantage not to patronize a man simply because he advertises the very lowest prices, as the idea of economy would be a gross deception. We may fail to convince them of this fact, and allow them to go in search of some dentist whose prices are more in accordance with those they have seen advertised in the newspapers, or, worst of all, we may weaken, and when the prospect of losing a patient presents itself, we may come down from our previously stated price with the request that, as this is a special price, they must not say anything about it. This is the worst method, because it directly tends to lower the standard of work of every one who resorts to such unprofessional methods. If we possess professional honesty we named as near as possible an estimate and fair price in the first instance, and to accept less means to be underpaid for the work. No man puts forth his best efforts or uses the best material for an operation when he feels that his compensation is not adequate.

There are two conditions relative to dentistry which have a tendency to encourage the quack and apparently make his way easy, while they have the opposite effect on the conscientious practitioner. They are the facts that slipshod and superficial work inflicts a

minimum of pain on the patient, and that our work is slow to find us out. The individual does not realize the harm he is doing himself or the dishonor he visits upon the profession; the desire of accumulation has eaten into him and dwarfed his conscience until his life is not worth living, but is a curse to the profession. Habit becomes law to a very great extent, and bad habits prevent the action of beneficial laws. It is impossible for us to keep the organs of professional honesty and decision of character at work if we persistently ignore their promptings and turn our backs on their necessities. There is no just law that demands that a man should drive business away from himself, even though he be a dentist. Yet our guide has told us we have two reputations,—namely, one with the public and one with our professional brethren. As we often have to deal with patients of others, ethics forms a very prominent link in the chain of our professional duties. Very often a layman having grievances comes to consult you without giving the name of his regular dentist. Very often the grievance is in the imagination and not in the quality of work, and a few words prompted by professional honesty will send the patient back to his regular dentist in a much better frame of mind. You can often do this without exceeding the demands of fraternal duty. There are many instances where the patient of another brother comes under our observation and influence. Very often they come into our own office in company with our own patient, both ethics and justice with a small portion of common sense demand that we should make no remarks of insinuation or accusation against our professional brother, nor in any manner should we endeavor to win the patient by alienating him from his regular dentist. Sometimes another practitioner intrusts his patient to our care for some special service; we should be scrupulous not to undertake any work other than that specified. Our fellow-dentist has displayed his confidence in our integrity, and it would be a poor return to deliberately alienate the patient. It would be well to refrain as far as possible from criticising the work of others, as we do not always know the circumstances under which the work has been done, nor how much of the patient's tale is to be believed. Our first duty is to be true to ourselves, then we will be true to others, and be ready to always give our best service and at the same time be ready to give warning against incompetency, as the rule of ethics would be broken and we would forfeit all professional honesty if we should attempt to protect the quack

or any one who should be guilty of malpractice. Let us all bear in mind the best way to advertise is to join your local and State Dental Society and take an active part. No man is sufficient unto himself; if he be a superior dentist he owes it to his profession to join the society and demonstrate his superiority; if he feels himself deficient, he should join the society, that he may make himself more proficient by exchanging ideas with his fellow-man. Honor and character always command admiration and secure respect. It is natural to believe in such men and have confidence in them.

The public can always better understand and appreciate a man's real character and ability by the manner in which he conducts himself towards his professional brother and competitor, and by his transaction of the seemingly common-place details of daily duty, than by his public exhibition of himself as a genius, a superior operator, or a "Cheap John." It seems to me that this lesson ought to teach a man to strive that he might possess professional honesty and decision of character that will make him a man that knows the commercial value of being honest and a gentleman, not a quack. Such decision will warrant success professionally, and means success as a man. Lacking in this respect means failure as a citizen, and will in the end mean defeat. That which we obtain through false pretence and negligence is always far less ours than that which we acquire by honest and diligent, persevering effort. It is not ease, but effort, not facility, but difficulty, that makes a deserving dentist. There is, perhaps, no station in life in which more difficulties have to be encountered and overcome before any decided measure of success can be achieved than dentistry. Those difficulties are, however, our best instructors, as our mistakes are often our best teachers. Wherever there is difficulty, the individual man must come out for better or worse. If a man be a man of determination, the difficulties will fall away of themselves. Often you hear a man say he would like to act differently and be more professional, but his competition is of a nature it will not permit it. The desire must ripen into purpose and effort; and one energetic attempt is worth a thousand aspirations. Facility and ease will come with practice, and strength and fortitude with repeated effort. Encounter with difficulties will end only when life ends.

To help yourself honestly, you must have hands to help others. Take into consideration the fact that the vast majority of those who make the dominant idea of the profession money getting always

fall far short of affluence. Practice founded on professional honesty and decision of character and a sufficiently high conception of the true spirit of professional ethics, a true regard for the actual public welfare, and so large a measure of sound, practical common sense as to refrain from a "Blind Tiger" method of practising dentistry, will soon win for itself the approval of the intelligent portion of the community, and in due time will be generally respected and appreciated. But so long as the profession is unprotected from persons who are willing to deceive the ignorant and prevail on them to accept in return for money work which instead of proving a lasting benefit is but the product of unskilful hands hastily put together, the better element of the profession will remain at a disadvantage. The best men do and always will maintain the standard of an honest and scholarly profession, and it is unfair to them and every honest member of our profession to compel them to meet and overcome prejudices created by ignorance and fraud, which are practised by those who will allow the reflection of a silver dollar to blind the influence of conscience and honesty. Through the profession the certificate is given to practise, therefore we are supposed to see the danger first, and to demand that the profession be closed against those unworthy of the calling, and the public look to us for protection against these barnacles of ignorance and greed. If this were not a fact, our profession would have no legal recognition, and legal recognition makes this a fact. Lack of professional qualifications in the few engenders lack of confidence in all, and the public and profession both become losers. Honorable contest for public preferment makes all better by bringing into active operation the very best of our energies and skill. But this is true only when the competition is honest. There is a field for usefulness to humanity in our profession, the breadth and future possibility of which are not equalled by any other profession. And now, having assembled together for the purpose of the advancement of our profession, let us each, as we come in touch with our professional brother, strive from the first to do him good; for it is an undisputed fact, that as we help one another we advance the standard of our profession. Remember, we are paid in good coin when we adhere to ethical principles and unflinching honesty of action. Now, can you afford to do slipshod, evasive, hypocritical work? Can you afford to shrink, or make believe or practise pretence in any act of life? No, no; for all the time you are moulding yourself into a deformity and

drifting away from professional honesty and what is right. What the world does and says about you are really no matter, but what you think and what you do are questions vital as fate.

In conclusion, I will say I have referred mainly to the mere pecuniary and worldly advantage of professional honesty and decision of character.

In closing, I will merely say I believe there is an advantage beyond this. I do not believe any achievement can be higher or any reward greater than that of the man who, after living a long life of professional activity, and when life's sun is almost set, can look back and see there nothing but honest work honestly done, high ideals of professional honesty and dignity of character lived up to, and, in spite of disappointments, failures, and mistakes, activities that resulted from the purest and most honest intentions and principles.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A REGULAR meeting of the New York Institute of Stomatology was held on Tuesday evening, October 1, 1901, at the residence of Dr. MacNaughton, No. 63 West Forty-ninth Street, New York City.

The President, Dr. J. Morgan Howe, occupied the chair and called the meeting to order.

The Secretary read the minutes of the last regular meeting, which were approved.

SPECIAL BUSINESS.

The President.—Section 9, Article II., of the By-laws, provides that at the October meeting the President shall appoint two members, who, with the Executive Committee, shall constitute a Committee of Nomination for all the officers to be elected at the annual meeting. In accordance with that requirement, I will appoint Drs. C. B. Parker and J. B. Locherty, who, with the Executive Committee, will constitute a Nominating Committee for the ensuing year.

I have a note from Dr. Bogue, to inform us that our fellow-

members, Dr. Cowardin, of London, and Dr. Bellaserio, of Sydney, Australia, have recently died. Can Dr. Bogue give us any information further than that contained in his letter?

Dr. E. A. Bogue.—I cannot, excepting that Dr. Bellaserio, as I suppose is generally known, was one of Sir John Tomes's old friends, and was full of years at the time of his death, which was expected. Dr. Cowardin, a young man, was here with us a few months ago, and died very suddenly. Dr. Cowardin's brother lives in Baltimore.

Dr. S. E. Davenport.—It is a painful duty I perform in officially announcing to the Institute the death, June 16, 1901, of Zachary T. Sailer, D.D.S. Dr. Sailer was one of the twenty-three charter members of this organization, and is the third which the Institute loses of that number by death, the other two being Dr. Charles F. Ives and Dr. Charles W. Meloney.

Dr. Sailer was the Institute's first curator, occupying that office until the latter part of 1897, when on account of ill health he resigned from the list of officers, retaining, however, his active membership.

Those of us who came often in contact with Dr. Sailer either professionally, socially, or in the transaction of the business of the Institute, invariably found him genial and courteous, resourceful in the management of affairs, and a gentleman with whom it was always pleasant to associate.

During the last two years Dr. Sailer's health prevented his meeting with us, but that he was interested in the work of the society was shown by several letters he wrote lamenting his inability to attend meetings as formerly.

The universal feeling in our membership is, I am sure, one of sorrow and deep regret for the loss which the Institute has sustained in the death of Dr. Sailer.

The President.—I am sure we all sympathize with the expression just made with regard to our loss in Dr. Sailer's death, and I do not know that it is necessary that a motion should be made to receive the communication and make it a part of our proceedings of the evening. I think it would be so understood.

COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. C. O. Kimball.—It came to the knowledge of the Executive Committee very late this summer that at the meeting of the

National Dental Association last year it was voted to receive as delegates members from all recognized dental societies who accepted the ethical standard of the National Dental Association as their standard. By some mistake, the notice was not sent to us in time to bring the matter formally before the entire body of members, and, acting for the Board of Directors, the Executive Committee authorized the President—or rather the Vice-President acting in the absence of the President—and the Secretary to appoint two members to represent the Institute at the National Dental Association at Milwaukee. The meeting was an interesting one, and calculated to do much good. Dr. Bogue and myself, who were there, may possibly later on have something to say about the details of the gathering. I wish to report formally our acceptance of the invitation.

The President.—I am sure we are all gratified that such action was taken. Of course we wish to perform our duties as related to the national body, and we are much obliged to the members who acted as delegates. If Dr. Bogue has anything to tell us about the meeting that he thinks would be interesting, it would be acceptable at this time.

Dr. E. A. Bogue.—We have heretofore not been represented in the National Dental Association, and there was a very considerable effort made that none but State societies should be represented in that body. One of our members, Dr. Wheeler, made a good deal of effort at Old Point Comfort to promote the resolution that was finally passed, admitting to membership delegates from all reputable and well-organized dental bodies that had been in existence a year and recognized the code of ethics. As Dr. Kimball and myself will remain permanent members, I presume, it will be in order for the Institute to remember that there will be vacancies for the ensuing year, and I hope that better delegates, or those better qualified, will go next year to represent this body and work for it, and that we may come into closer relationship with an institution which is calculated to do, as Dr. Kimball has just said, great good, and which has it in its power very largely to influence our calling.

It may be known to many present that a number of bogus diplomas have been issued to men on the other side of the water, and some on this side. That matter was taken up at the meeting, and with the assistance of the American Consul at Munich, Mr. Worman, efforts are now being made to have the law of Illinois so

construed that improper licensing or diploma-ing "*in absentia*" cannot be made. Governor Yates, of Illinois, has been interested, and something like three thousand six hundred dollars (I speak from memory only) was voted by the two bodies—the National Dental Association and the National Association of Dental Faculties—to carry out this plan, with Consul Worman as its mouth-piece and Dr. Crouse as its actuary.

Dr. George S. Allan.—My head is so full of yachts, and blue skies, and salt water, that I had almost forgotten this communication which I wish to present. I brought this with me, not because I think there is anything particularly new about it,—there is nothing new under the sun, anyway, especially in mechanical dentistry,—but it contains a principle that I have used in my practice considerably, and with very beneficial results, so I had my plate-worker, while making the one that is to be set to-morrow, make a duplicate to show the Institute. The patient, who is about forty years old or a little more, had practically lost the use of the left side of the face, although she has the full number of teeth in the upper jaw, and has lost only one in the lower jaw; but the two molars, as you will see when this cast is passed around, are so badly decayed on their approximal faces and grinding surfaces that the food crowds in against the gum in a most annoying and distressing way, and keeps the gum irritated so that she cannot eat on that side with any comfort. The twelfth-year molar is a living tooth; the wisdom-tooth is dead and very badly decayed indeed. It would have been possible to put in a very large filling on the grinding surface of the twelfth-year molar, but it would have been nearly impossible to fill the wisdom-tooth in the same way, to have the spaces occlusal and prevent the crowding in of food. So I made this little appliance, which you will see fits over the two teeth and is to be cemented in place. In brief, it is two rings, bands, one on each molar, soldered together on their approximal surfaces. If the patient were going to remain in this country, I would have had her use this appliance without cementing, and the probability is it would have been equally successful, and could have been kept clean, as I have made similar appliances, and had them work very satisfactorily. There is no rapid decay going on in the mouth, and by watching such an appliance as this, there is no real necessity why there should be any large amount of decay. The patient could remove it, clean her teeth, and put it back; but as she is to

be gone a year in Europe, I have decided to cement it in place. The appliance explains itself. The gums will be perfectly protected when it is in place. The toothpick goes underneath and keeps the space clear, and as the articulation is very good, I feel certain that I will restore to this patient full use of both sides of her mouth. As I say, there is nothing really new about it, but possibly it may be new to some of you,—the way in which the thing has been shaped.

While the cross-piece goes between the bicuspid and the twelfth-year molar, it simply goes between the teeth without going down to the gingival border, so the floss-silk can be used.

Dr. F. Milton Smith.—I have two or three little things here that I thought might be of interest. I first call attention to a lateral incisor tooth, that two or three days ago my patient broke off at the gum line. It is interesting to me for many reasons. The principal one is the very large contour filling (proportionately to the size of the lateral incisor tooth), which was put in nearly six years ago, and which is anchored at the lower end or cutting edge with oxyphosphate of zinc cement. The tooth at that time was very frail, and had been filled and refilled,—at one time the patient's teeth decayed very rapidly,—and when the contour filling which had been in previously to this failed, the cutting edge of the tooth where we ordinarily get the anchorage was so thin that I felt it was absolutely impossible for me to depend on that edge if I malleted gold in the undercut. I will pass the tooth around in a moment. What is left of it is almost entirely enamel on the outside. The cement was put in in its plastic condition, as many men are accustomed to doing nowadays, and, as I remember it, White's mat gold was embedded in the soft material. After the phosphate had hardened, the gold was thoroughly condensed with hand-instruments. The upper portion was retained by undercuts in and about the neck of the tooth. The labial filling had been in some years previous to that. What I want to call attention to is the fact that it stood for six years with that kind of anchorage, and I do not believe it would have been possible, if I had malleted gold in it, to have had it stand until I finished the operation. So little of the tooth-substance remaining, the patient having fillings almost as extensive of gold as this one, I did not want to put in a porcelain tooth, because it would have been unsightly in connection with the other teeth. I found, greatly to my surprise, that the pulp was

alive. The patient was forty-five years of age. In order that it might be restored as nearly as possible as this tooth is, I had prepared a gold-band crown to which I added a gold face, and then cut out sufficient of the gold face for my porcelain, as I have it here. I purpose to make a porcelain inlay and cement it in this place, and think when I shall have set it I shall succeed in deceiving the patient's friends so they will not know she has lost a tooth.

Another thing is of interest to me in the porcelain inlay line. I presume some of the gentlemen present have had difficulty in getting disks sufficiently thin and fine to cut the retaining grooves around small inlays. Dr. Allan had in his instrument-case a comparatively fine disk, which had been the best he was able to secure. I borrowed it from him, showed it to White's man, and he claimed it was the best made, and said he would send me one like it. I found that for the purpose of cutting small inlays it was absolutely of no account to me. Almost immediately on getting it, a copy of the *Dental Brief* came to me, and in the items of interest (I do not know under what head they are classed there) some one made the suggestion, which, of course, is not new to any of us, that copper charged with carborundum powder or diamond dust would cut the porcelain, and suggested that a very thin piece of copper might be soldered on to a mandrel and charged with carborundum powder and glycerin. I accepted the suggestion, and tried these little disks. I meant to bring a tooth in which I had made a large number of cuts, so you might see how readily they cut. It is very simple to make them, if any one is mechanically inclined, and almost every man is,—certainly every one connected with this Institute,—and if you do not want to make them, your instrument-maker will do it for you. The White's disk is also in the box, for comparison.

The President.—If there is nothing further under this head, we will pass to the important communication of the evening, which is to be furnished us by Dr. Samuel A. Hopkins, of Boston, who will read a paper on "Science as a Teacher of Prophylaxis."

(For Dr. Hopkins's paper, see page 80.)

DISCUSSION.

The President.—Gentlemen, this very interesting and suggestive paper of Dr. Hopkins is before you for discussion. We invite all present to take part in discussing it.

Dr. S. E. Davenport.—The more we learn of science, the more do we learn that it is but the basis of practical, common-sense reasoning. There was a time when we were afraid if the word "science" was used; it seemed beyond us; but Dr. Hopkins has a way of expressing the truths of science in understandable language, for which I am personally obliged. We are unfortunate in one thing, however, Dr. Hopkins belongs to many societies, and the work of his hands and brain has to be distributed. We have lost the first chapter of a very interesting story, and while Dr. Hopkins was kind enough to quote a few headings from it, we are left in the dark regarding the carrying out of those thoughts. The first paper on this subject, as I understand, was read at the June meeting of the Massachusetts Dental Society, and I have been informed to-night that a continuation of this subject is to be given by Dr. Hopkins before the Northeastern Dental Society, which meets the last of October. I am very glad the movement is on foot for a number of our members to go to that meeting at Springfield.

One of the points of Dr. Hopkins's first paper related, he tells us, to the difference between living teeth and pulpless teeth, in their ability to resist decaying influences, and I shall read his paper as soon as I have the opportunity, as much to learn his position upon that very important question as for any other one thing. I am hoping he will have taken the position that the dental pulp is of enormous value in the adult tooth. There is a large school of dentists at the present time who not only practise but preach that the dental pulp is but a formative organ,—one simply of development,—and that it has no particular value in the adult tooth. I believe that to be a mistaken idea, and anything which is said based upon scientific investigation which shall incline us to the preservation in all possible cases of the dental pulp will, I believe, be for the good of our patients.

A very important point which Dr. Hopkins referred to in his paper this evening is that of the necessity for the proper occlusion of teeth, in order that the best conditions may be established and continued. That is a point to which too little attention is given. Extractions are advised, many times carelessly and without due study of the casts as well as of the mouth, with the mistaken idea that the correction of the deformity will be made easier and that the teeth will rearrange themselves after the extraction. The occlusion of the remaining teeth in that mouth is often so interfered with

that not only are the teeth more difficult to cleanse because of their irregularity and abnormal position, but elongations of certain teeth occur, and a general lack of symmetry results.

Dr. E. H. Babcock.—There is one point I would like to speak about, not so much to express any fact myself, as to get the views of the other members of the society. Dr. Hopkins spoke of the great rapidity in the process of decay in mouths where the saliva was thick and ropy. I have several cases—two brothers in particular—whose teeth decay very rapidly, and the saliva has always been very ropy, but I notice it varies at different times. As Dr. Hopkins spoke of the matter, the question presented itself whether the increased decay was due to the decomposition of the organic material which is undoubtedly in that saliva, making it ropy, or whether that organic material merely acted as a pabulum for the micro-organisms.

There was one other question about the cleansing of the teeth. Dr. Hopkins referred to Dr. D. D. Smith, of Philadelphia. I was present at a meeting where Dr. Smith discussed the question, and I was very glad he brought out the points as forcibly as he did; but one thing I think he rather overdid, and that is, he spurned the dental engine altogether. I think the stick on which he lays such stress is all right; but I think you can supplement it with the engine, with less waste of time and with more pleasure to the patient. I would like to have Dr. Hopkins's view of the ropy saliva, if he can spare the time.

Dr. Kimball.—I came down from Lake George last night purposely to hear Dr. Hopkins's paper, and expect to go back to-night. I did so, I am free to confess, very largely as a matter of courtesy to Dr. Hopkins, as he is an old and dear friend of mine. I had supposed I would be through with my summer vacation when this paper was read, and it required quite a struggle for me to leave last night. I will say that the paper has far exceeded what I looked for in the way of a full statement of the scientific principles involved, and of the necessary and proper deductions from them, and I cannot help but think how much good will be done by the spreading abroad of the report of this paper when published. Turning our thoughts in that direction, we owe much to a good many men, among them Dr. D. D. Smith, who honors us with his presence this evening. Looking back, we see that the leaders in professional life have been the men who have paid attention to this

very point,—care of teeth from a hygienic point of view,—who have endeavored so far as they knew to resist decay, and I am sure in the future the outcome of such papers as this and the thoughts and studies which flow from them will help us much in the intelligent understanding of the causes and development of decay, thereby enabling us the better to prevent it.

The President.—Dr. D. D. Smith, of Philadelphia, is present. We shall be glad to hear from him.

Dr. D. D. Smith.—I suppose it is my fault that I was not here to hear the paper of the evening, but as I was coming up the street I was disposed to charge my failure to find you to this great city of New York. I found it hard work, indeed, to get on your track, and have been wandering around the streets of your great city consulting policemen and penny-in-the-slot directories until, to my great regret, I have missed the paper entirely. I had fully expected to be here to hear every word of it, because it is a subject in which I feel the greatest interest. I suppose it is hardly fair for me to say anything at all, and cannot attempt a discussion of the paper, for the reason that I know nothing about it; but I know that Dr. Kimball would not have come all the way down from Lake George to hear this paper to-night if he had not the most implicit confidence that the writer of it was thoroughly competent in this department of research; so I assume that the paper reflects really scientific views. And if this be so, of course my views must be in accord with it. Acting upon that presumption, I may be justified in saying a word along the lines upon which Dr. Davenport was speaking when I came in.

New York, with its flaming torch in the outstretched hand of the Goddess of Liberty down in your harbor, is supposed to hold up the beacon of progress not only in commerce, but in science as well. I had expected that everything emanating from New York, even dentistry, was unimpeachable; but I am compelled to take issue with the views which have been presented to-night if they are the accepted views of the profession in New York.

When my paper read before this society in June last is published, there will be found a discussion of this matter of pulpless teeth. I must say I was surprised to hear such stress laid upon this point,—that a tooth with a living pulp is so much superior to what I would call a “pulpless tooth,”—and I ask myself the question, Is there not often a misapprehension as to what the tooth really

is? Is it the crown? If the crown is the tooth, it must be admitted that a pulpless tooth is not as good as a tooth with a living pulp. But is the crown the tooth? No. Every one will say the question admits of no argument; the crown is not the tooth. What, then, is the tooth? What is the vital part of the tooth? Take a crown in the most perfect condition and deprive it of its root, or any portion of its root. I do not care whether it has a living pulp or not; has it a root or roots with vital, well-distributed cemental and pericemental issues, and these attached to the alveolar process, and are these cemental and pericemental structures in good condition? If the tooth is not of that character, it matters little what the crown is, *you have not a good tooth*. But suppose you have the root of a tooth in perfect condition, the cementum and pericementum around that root, and the alveolar structure to sustain it, the condition of the pulp or the crown is of trifling account,—you have a good tooth. Where is the man who has practised dentistry who is not able to say that with such a root and such surroundings we can give back to the individual practically as good a tooth as Nature ever put there originally? Is that not so?

I claim that there is not a practitioner in this room who is not demonstrating this fact almost every day of his life. No dentist gives up a tooth because the pulp is dead. Who sends his tooth to the extractor because it has a broken crown? I tell you a large number of teeth are better and more surely saved when without pulps than the same teeth with living pulps. You have never seen nor has the demonstration been made that alveolar pyorrhœa ever began in a pulpless tooth; but you may have seen many teeth which have been rendered perfectly valueless, absolutely lost, through pyorrhœa with perfect living pulps in them. You have seen many of them in which pyorrhœa began and progressed to the destruction and loss of the tooth; but I claim the record is yet to be made of beginning pyorrhœa in a pulpless tooth. Understand what I mean by that. One may have pyorrhœa and afterwards a dead pulp in the tooth, but I say the records are yet to be made of a tooth in good condition as to its alveolar surroundings, and with the pulp destroyed and removed, exhibiting the beginning and progress of pyorrhœa. Hence I say that there are many teeth that are better without pulps than with them. Do not understand that I am advocating the wholesale destruction of pulps to forestall pyorrhœa, and yet I do destroy many pulps by treatment

and save many teeth that have been attacked with pyorrhœa, which I believe are unsavable by any other process.

I take the ground, then, gentlemen, that the root of the tooth is the tooth, and that the destruction of the pulp in no way interferes with the cemental structures which give attachment of the tooth to the alveolus; that the cementum and pericementum perform the nutrient function to the root entirely independent of the pulp, and that pulpless roots efficiently treated will be retained in connection with the alveolus indefinitely and in perfect comfort. And is the dental profession ready to admit that, with the multiplicity of engines and instruments, varieties of artificial crowns, and methods for applying them, it is unable to cope with the mechanical problem of affixing a crown to a good root, whether such root be incisor, cuspid, bicuspid, or molar, a crown which shall give back to the mouth the essentials of a tooth in durability, appearance, and utility? I for one am not ready for such admission.

As regards the use of the engine to supplement the stick, there may be on the labial faces of much neglected front teeth accumulations which can be removed with the engine and rubber or felt wheels, but for this periodical treatment the orange-wood stick is much better. The stimulation resulting in improved tooth-structure from this treatment with the stick and pumice is most marked, especially in the mouths of children. The best results are attained by this complete change of environment once in two or four weeks.

Dr. Bogue.—I want to express my extreme gratification at the paper that has been read to us this evening. I have had it brought to me more forcibly than ever before (except on one or two occasions) when I tried to tell the truth—tried to tell something I thought I knew, how difficult it is, and now Dr. Hopkins has tried the same thing, and I know he has tried earnestly. He tried to speak the truth every time, yet when he spoke of Dr. Smith's polishing with the stick being so beneficial that the teeth would be aided by it, and would come into their positions, and occupy them in a much better condition than they could in any other way, he omitted a condition that came to my mind, which I want to refer to, and that is a condition of defective formation. Dr. Hopkins will, I am sure, be the first to assent to what I say. I have a skull in my possession, and all the temporary teeth are in it. Most of the permanent teeth are in it also, not all. I was told that the manner of procuring this skull was to have the child shot at the

proper age, but of course I do not believe that! Nevertheless, the skull is there. Dr. Davenport has seen it, and also a number of others. The first permanent molars (sixth-year molars) are nearly erupted, and they are in such good condition that we would acknowledge them to be the molars of a civilized child, at least, and to be amenable probably to the treatment suggested in the paper; but when we come to examine the enamel caps of the second molars, which are not yet erupted, and would not have been due for five or six years, as the child lost its life at about six and a half or seven years, we find that they are not perfect by any means. There are crevices between the different layers of enamel. There are sulci, very deep, even to distinct holes. The texture of the enamel is entirely different from that of the first molar, and this difference in formation and structure is perceptible on all the teeth that were in process of formation at the same time. It is a most interesting condition of things to examine, when we undertake to say that a certain process is going to produce and retain immunity from decay. We cannot say that, and we cannot yet express exactly what we mean. I have to the best of my ability made my compliments and thanks and expressed admiration of Dr. Hopkins's way of stating things, and yet he did not explain that. He could not. It is a point well worth considering, however.

Dr. Davenport.—I think it would be only fair if our other Boston friend would say a word on the subject.

Dr. G. F. Eames.—I am glad for this opportunity to express my admiration for the thoughts that have been given to us to-night by the essayist. I have a profound respect for the man who is able to observe conditions, and then is able, by the use of his chemical analyses and microscope, to demonstrate and come to some satisfactory conclusion by reason of his more technical scientific experiments. I should say, as a result of the paper that has been read to-night, that the essence of the treatment of the condition of dental caries would be embraced under two heads:

1. The promotion to the fullest extent of the function of the teeth as they were designed to do.
2. The bringing about of the proper environment of the teeth by local and general hygienic treatment, which should include the most thorough cleanliness of the teeth and surrounding parts.

I am not prepared to discuss the paper in a general or extensive way. Thank you for the privilege of expressing my admiration of it.

Dr. D. D. Smith.—I am very sorry Dr. Bogue felt he must leave at this time. He stated something that I suppose to be in opposition to the spirit of the paper and in opposition to positions which I have taken on this subject of prophylaxis. Therefore, I think it but fair that I should reply to it, although he is not here. I would have been glad to have him remain and hear just what I have to say in regard to the skull. If I may be permitted to express my convictions, I must say the skull with an imperfectly formed undeveloped second molar has no place in the discussion before us. What has imperfect prenatal formation to do with the prevention of decay in the mouth? Nothing, absolutely nothing. What if the enamel, the sulci, and the cusps are imperfect in the preserved skull of a child? What does it show? We must accept conditions not as we would have them, but as they are. It is better to deal with mouths as we find them than to exhaust energy in discussing impossible prenatal betterment.

But dropping this skull, we may properly consider the matter of improving an abnormal articulation in a child. Much can frequently be done in this direction, but you have no control of your patients. Children are not placed unreservedly in the hands of dentists except in special instances. I have had practice enough in dentistry to know that parents do not say to the dentist, "Here, my child is in your hands, do as you think best." I repeat, we must deal with things as they exist in dentistry, whether they relate to articulations, decayed teeth, or prophylaxis. One may talk general principles, and seek to be led by what one conceives to be right, but it will often be found impracticable. The child may come from another operator with tooth extracted, or perhaps has never been to a regular practitioner, but an extractor only; the tooth is out, and you are left to do as you can and not as you would. I can do nothing better for the improvement of articulations than to try and enforce the only true method of keeping the children out of the hands of the extractor.

Take the teeth in any way I have suggested, and change the environment regularly and systematically, hand-polish the teeth on all their surfaces, and put the mouth in a healthy condition, and in nine cases out of ten Nature will do perfect work in keeping the temporary teeth, in the development of the jaw, and in the production of good permanent teeth.

One last word in regard to the devitalization of pulps. Do not

understand me as being in favor of destroying pulps in young teeth or in any teeth without an object in view. Pulpas in the mouths of young persons especially should be conserved, not destroyed. But we should not lose sight of the fact that when necessity arises and we do destroy the pulp, we do not destroy the teeth. Pulpless teeth can be kept and made good 'way on into old age if we only treat them as they ought to be treated.

Dr. George S. Allan.—Very soon, undoubtedly, we will be called upon to pass a vote to Dr. Hopkins for coming here and giving us his most admirable paper on a subject in which all are so deeply interested and all are striving to attain. It strikes out in so many lines and takes in so many points of value and interest, that at this late hour it would be impossible to attempt any discussion of them, or do anything more than express the hope that in some way we may hear from Dr. Hopkins again, if anything further on the subject develops in his mind, and that he will give us some of his latest conclusions, especially on those points as would have reference to our daily practice,—how to attain those results, going more into minutiae, and bringing out a little more of the points that we would like to work on. It is impossible to touch on all the points in the paper. There is only one which I would briefly allude to, that perhaps the doctor has omitted,—I do not say forgotten, because that is impossible. Take that sublime saying of Pope,—

“All are but parts of one stupendous whole.
Whose body Nature is, and God the soul.”

We should look upon this little human being as an embodiment of that grand thought, and think of the relationship between the soul and the body, the spirit and substance. When we think how the development of the soul in some mysterious manner depends upon the body, and how the body is by its environment in all possible ways made to suffer and to languish and to fail to fulfil its whole fruition, the thought of longevity is one of prime importance. That being the case, especially in giving man a chance to develop along spiritual lines, there is nothing impresses me more as I grow older in my work and see more of it than the absolute necessity, if man is to keep to his full length of years, than the preservation of the teeth in a working manner. There is nothing on which the stomach so much depends for nutriment in its proper shape to strengthen the body, as that the teeth should properly prepare the

food, and lives are shortened by the absence of these most necessary organs to prepare the food, so that middle age and old age, even extreme old age, will be made useful not only to the individual, but to all mankind. I would like to have the privilege of offering Dr. Hopkins our sincere thanks for presenting this paper to us in this most masterly manner, in a way in which we can all understand it.

A vote of thanks was tendered to Dr. Hopkins.

The President.—Does Dr. Hopkins wish to say anything in closing the discussion?

Dr. Hopkins.—There is not much more to say. One gentleman has answered another and cleared up most of the points. This peculiar ropy saliva I have at times thought was connected with catarrhal trouble, and at other times stomach trouble. It seems to me that anything that causes irritation of the mucous membrane is apt to cause an increase in the thickness of the saliva. There are a number of bacteria, not especially acid-producing forms, frequently found in the mouth that would thicken the saliva, and make it more viscid and ropy, and it has seemed to me that this ropiness might come from bacterial activity,—not, however, from the activity of acid-producing bacteria. I have not cleared it up in my own mind, but there is one thing that has been evident to me, that whatever may be the cause of this ropiness, you will usually find that the gelatin plaques that Williams and Black, as I think, lay undue stress upon, and which are associated with caries, are found more frequently in mouths that have this viscid, ropy saliva, and whatever causes this condition of viscosity causes also the gelatin plaques. But that I do not think is acid-producing bacteria. I think that what Dr. Bogue said in regard to the enamel of the second molar in the case he mentioned can be seen very much earlier in life. In fact, as far back as embryonic life, the differences in the structure of the teeth are quite well marked, so that you might prognosticate the kind of teeth a child would have were it possible to examine them before they develop; particularly is this true where there is an interruption of nutrition. It may happen in prenatal life that some illness affecting the mother may cause an interruption in nutrition. This will cause an apparent line of demarcation in the enamel, and will leave it in an impaired condition when the tooth erupts. Next time I have a paper to read on this subject, Dr. Smith and I will have to get together outside, so as to

be sure we agree as to what we are going to impress upon the society. I think we do agree in almost everything. Certainly the differences in details are so slight that they need not affect the importance of our work. Our object, I am sure, is mainly to create better ideals. Every man can work the idea out for himself if he has the force from behind that will induce him to take hold of the matter. It will probably be found that individual methods will suit individuals better, and that no one broad scheme can be laid down that every man can bind himself to. One must study the conditions as they arise, but the important thing is to keep our ideals so high that we will have to keep climbing all the time to reach them, and in that way, I think we will accomplish what we are aiming at.

Dr. Kimball.—A suggestion has been made, and I would like to express it as the hope of the society, that in the publication of this paper Dr. Hopkins can arrange so that his three papers may be printed together. I know some of us would be very glad to have such reprints.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

HARVARD ODONTOLOGICAL SOCIETY.

THE Harvard Odontological Society held its regular meeting April 25, 1901, President Paul in the chair.

President Paul.—It is a good thing sometimes to have one of the younger men in the profession as our essayist. They are very apt to bring us something new, something original. I have the pleasure of introducing one of our younger members, Dr. Lawrence W. Baker, whose subject is "Facial and Dental Harmony."

(For Dr. Baker's paper, see page 69.)

DISCUSSION.

President Paul.—This is a subject that certainly interests us all. Those of you who are making plates for three and five dollars a set have the opportunity to see how you can make them better and give more value for the money.

Dr. Moriarty.—I have been very much interested in what Dr. Baker has said, and we have got many points from the cases that he

has presented here to-night. At the same time, while we all may aim for artistic effects in the mouths of our patients, in the majority of cases we cannot reach this result, because of the obstinacy of the patients themselves. While some of our patients will want teeth that are artistic, that are suitable for their age, the majority of them, women especially, will want teeth that are ten to twenty years younger looking than their teeth were at the time they were taken out.

I thoroughly believe with the essayist that more or less judicious grinding is what is required in the making up of artificial dentures to make them harmonize with the facial expression. Teeth should not be put up in the mouth as they come to us from the depots.

I am glad to have heard Dr. Baker's paper and to express my appreciation of it.

Dr. Werner.—I came purposely because I saw from the card that a young man was lucky enough to be drawn as an essayist. I wish it would happen oftener. Young men are elected members of this Society, and perhaps three to five years may elapse before they are drawn as essayists. During that time they are apt to move in the same limited circle without attempting to make investigations for themselves, and they dry up. The essayist's work as shown here to-night is most favorable and complimentary to himself, as it proves that he is not of that kind. He has not been standing still; he has been progressing, and just see what a few years on a little original work can do! Some of the older practitioners may say that is just what we are doing in many of our pieces, we are trying to make them as natural as possible, but, as Dr. Moriarty has said, it is just what the patient does not want done, and whatever success we make is often in spite of the patient; many times we do get their consent. Within a few years such a case was forcibly presented to me in a rather extensive case of bridge-work for an elderly lady. It was on the left upper side, extending from the central to the second molar. She was sixty years old, and positively selected teeth that in color and shape were suitable for a person eighteen to twenty-five, and I was not able to induce her to take teeth that would have been more suitable to her. She was highly pleased with the work when the case was done; nevertheless, from an artistic stand-point, it was radically wrong. You have to argue with your patients and try to make them believe that those teeth

that look very badly out of the mouth will look very natural in the mouth, and that many of those handsome specimen cases are wholly unsuited for the mouth.

In the making of partial cases there are many little things that have to be considered, such as receding gums, irregularities, stainings, and other points. Dr. Baker has shown very conclusively what can be done with a little judgment in making a denture correspond to the rest of the mouth. The majority of the artificial teeth that we see are abominably abnormal,—they are straight up and down, like children's wooden soldiers; they are many times too white and glossy, are often too small, they seldom show any wear, and, in fact, it seems to be the aim to make them as different from the natural teeth as possible. What we need to do is to correct this, grind and set them up so that they will look badly on the case, and then we shall find that they look very natural in the mouth.

I wish every young man could be so fortunate as to be drawn as an essayist in the first few years that he is a member of this Society; we should then have more of this original work, which would be of great benefit to the Society as well as to the young man himself.

Dr. Bigelow.—I am not one of the older members, nor yet one of the younger members of the organization, but I would like to express my appreciation of Dr. Baker's paper.

I think usually the question of utility—which is perhaps a strain away from the subject of the paper—is the first one that we have to consider when we are introducing artificial teeth into the mouth, and if we study very carefully the question of utility, we are many times, without knowing it, doing just the things which the essayist recommends.

Dr. Baker has laid a great deal of stress on the grinding of the cutting edge and the festooning of the gum, but he has not said so much about the relative position of the teeth to each other and to the complete dental arch. I myself have many times destroyed the sameness or evenness across the front of the mouth by taking off a central, say, and placing it in a position to more closely occlude with its opponent, and by cutting off something from the length of the centrals, or the laterals, or the cuspids, as the case might require. In addition to such changes I take into consideration the color of the teeth in making my selection, sometimes having two centrals of different shades, and having the laterals two or three

than the centrals, and the cuspids two or three shades
the laterals, the cuspids almost always having some-
wish tinge. I do not go back of the cuspids in this
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is another thing which adds to the general natural
things are done carefully, you will get the greatest
ity from your work and at the same time get some
results which the essayist has referred to, instead of
which have every appearance of being artificial.
e said is not to take issue with Dr. Baker, but simply
he fact that the arrangement of the teeth, as well
g and the selection of teeth of different shades,
e considered in our attempts to get these desirable

—I think Dr. Baker ought to be congratulated on
which he has brought out the artificial part of our
a member in this Society some time ago who seemed
ting this part of our work be done by others; he
entists ought to do operating principally and let the
t of it go to outsiders who do nothing else. I think
mistake, although I think the tendency is in that
ny dentists do not attempt to do mechanical work.
ke the impressions and send their work down to the
ry, where it is turned over to boys of from sixteen to
have no artistic conception or perception, and who
according to their own inartistic ideas; then they
dentist and tried in, and then sent back to the dental
n to be finished, the men who make the plate never
patient; and that is the reason why we do not have
with some of our work. I think the younger men
to do their own mechanical work, and not be afraid
ome time to accomplish that end. There are a good
en whose time is not fully occupied in the first few
practice, and instead of sitting down and waiting
come in, they should devote that time to improving
mechanical and other lines. I do not think there

are very many really first-class mechanical workmen among the dentists to-day, and those who are first class have little difficulty in keeping their time occupied.

In regard to prices, sarcastic reference has been made to plates advertised for from three to five dollars, but if a man can do really artistic work, he can practically get his own prices, and there is no reason why it should not be just as profitable as any other branch of our work.

I think Ash's teeth are more natural looking than S. S. White's or the Consolidated. These can be obtained in Boston, and those of you who have not used them will be surprised at the artistic appearance that they present compared with the others. It has been said that patients do not want these natural teeth, and insist on having something entirely unsuited to them. I think we make a mistake in yielding to their wishes so readily. In the majority of instances they are not talked to sufficiently to have them try an artistic set, and I think if we would only devote a little time in explaining the facts to patients, they will, after a while, consent to have what they ought to have.

In this picture of Dr. Baker's nothing is brought out more prominently than the poor quality of expression in "store teeth." They apparently possess about the same appearance all through; they are too set and even, too much like each other, and you will find it so in most of the teeth that are made in moulds. They cannot get the sharp angles that Dr. Baker has brought out here with his grinding. I was told at White's that at one time they made these artistic teeth and could not sell them. It was claimed that patients would not have them. I think it is our fault. If we know what we are about, and put it strong enough, they will take them, and after they get them they will be better satisfied than if they had the plain, white-looking, characterless teeth.

Dr. L. W. Baker.—This is the only case we have of an upper and under denture in occlusion, and it is ground thoroughly, as Dr. Bigelow spoke of, and I think we can get a great deal of comfort for our patients by spending a little time to get a perfect occlusion. That is a point that I got from Dr. H. A. Baker, and it is my custom to grind them on the articulator so that they will "bite hairs," so to speak, at all points. I did not go into that matter deeply in the paper, as I did not think it was quite in the special line that I had selected.

Dr. Starratt.—While the doctor is on his feet, will he kindly tell us how he stains those teeth to imitate discolorations?

Dr. L. W. Baker.—I do not know very much about staining, but you can get the effect I spoke of by using a chestnut-brown mineral paint, which you can get at any of the art stores. It is painted on and the tooth is baked for about a minute in an electric furnace. I have tried scratching the stained parts with a knife for some time, and it seems to hold. I would use stained teeth especially in partial work. You know it is impossible to get the shades of the natural teeth in our artificial work, but by just putting these little stains around the gums and on the cutting edges we get a very pleasing effect.

Dr. Werner.—Has the essayist done anything in taking off the gloss with hydrochloric acid?

Dr. L. W. Baker.—I have not in any of these cases. As I stated, I am really just starting in on this line, and that is one of the points that I intend investigating later.

Dr. Werner.—I think some very good effects can be obtained in that way. I have seen cases where teeth from the store have been placed in hydrochloric acid, and in from half a minute to two or three minutes that shine is all taken off, and when they are dried on the model they look very much over-doctored, but they have a very natural appearance in the mouth.

Dr. H. A. Baker.—I hardly came prepared to say anything, as I did not know that I was coming here until about half-past five, at which time my son asked me if I would like to come down and hear his paper.

I am rather peculiarly situated in this matter; first, if I should speak complimentary of him, it might seem as if I were praising my son. On the other hand, if I should criticise the paper, they might say I was jealous. But after all, I think those of you who know me best understand pretty well that when I am discussing a paper I am apt to say what I think of it without fear or favor.

After my son got up his specimens for "Facial and Dental Harmony" he asked my opinion of them. My reply was, "Your types are very good, but in the work there is great chance for improvement;" but as he presents them here this evening the fault seems to be rectified.

This subject which he has chosen for to-night is one that I have paid a great deal of attention to all through my practice, and

the second paper I ever read before a dental society was on this line under the title of "*Æsthetics in Dentistry*," and one of the principal features emphasized was the fulness over the cuspids and the line which is presented on the upper maxilla, which he has shown here to-night. This I worked out by a study of the skull, and, so far as I know, was original with me and was done for the purpose of restoring the features to that of normal.

While my son was working on this subject I had occasion to make an upper and under set for quite an elderly lady. For that case I used quite dark teeth, making them a little irregular and grinding the cutting edges to imitate teeth having been considerably worn. After putting them in I called Dr. Howe and Dr. Lawrence in to see them in the patient's mouth. They looked at them carefully, but made no remarks about them in the presence of the patient; but when they got into the other room I heard Lawrence make the remark, "The old man has made a pretty natural set of teeth, hasn't he?" There have been a few points brought out to-night which I wish to speak about. One is in regard to our patients not wishing artistic work. I think it depends altogether on how you approach them on the subject. If we were to put in dark, irregular teeth, with the cutting edges ground, etc., without making any remark upon it, they would refuse to wear them. First, you must educate them by defining the difference between white, even, and small artificial teeth and the natural teeth as we find them according to the age of the patient; for instance, how an elderly person looks wearing a wig intended for a younger person. The lack of harmony is most noticeable also in people who dye their hair. I think that there is one fact that always accompanies the latter,—the person who dyes his hair never deceives any one but himself.

To me the most striking illustration the essayist has shown to-night was in a photograph of the elderly lady with white artificial teeth on one side and natural on the other, when he covered each side alternately with a card. The latter explains the whole matter. It is not a hard thing to convince intelligent patients of these errors.

Another thing I consider of vital importance, and that is the occlusion, as Dr. Bigelow has stated, "for utility." Many a time I have seen an upper and under set of teeth which had only three or four points of contact. They should articulate so that you could

not see daylight between them anywhere. Another great fault is in getting the upper molar teeth too long in double sets. If length is required to fill space at this point, it should be in the lower molars. Another point which I think dentists, as a rule, pay very little attention to, is the contour of the gum. This is the principal point where we get expression, especially about the cuspid region.

I wish to compliment the essayist upon his beginning, and as he improves in his work he will eventually get types which will be a credit to himself and a benefit to the rest of us. He is certainly on the right track, and I think it would be a good thing for all of the young men to follow his example and make this line a special study, so as to be able to improve their methods for doing the work that comes to them, and, therefore, be a benefit to the profession at large.

Dr. Moffatt.—Dr. Starratt asked about the stains. You can get boxes of stains from the manufacturers, Ash & Sons, for something like six dollars a box, which will give you almost any color that you will want to use. It is carefully painted on and baked in any of the little furnaces on the market, and, as Dr. Baker has said, it gives a very natural appearance to the tooth.

Dr. Bigelow brought out a point in regard to having the laterals darker than the centrals and the cuspids still darker, and it is a good thing to bear in mind. In the natural human teeth the front teeth are whiter than those farther back in the mouth. The air dries the surface of the front teeth during movements of the lips in ordinary conversation, and they look whiter, the same as they do after the rubber dam has been used. The back teeth do not usually get so much brushing, and in addition to that the shadows as they appear in the mouth make the back teeth look very much darker, so that by adopting Dr. Bigelow's scheme of using darker shades as you go farther back in the mouth, you get a much more natural-looking set.

If any of you have had any experience in carving teeth, you will have seen the necessity of getting a suitable color; a color which seems right with a single specimen will not do with fourteen teeth. If they are not colored with the warmer red or brown hues, you will find as soon as you get them set in a row that they look quite ghastly. One thing that is to be considered by dentists carving their own artificial teeth (which is really not very difficult, and there is no reason why any dentist cannot learn it) is that it is

especially useful in single teeth. Oftentimes we need a tooth of peculiar shape, many times we need a lateral that is considerably different from anything we can find in the dental depots, and, do the best you can, the result is not satisfactory to you; but if you carve the tooth you can match the mate on the opposite side in from ten to fifteen minutes, and get just what you want, and you can also match pitted teeth.

The principal stain used in staining teeth is the oxide of titanium, which is rather an orange-yellow shade. Another is the lemon-yellow. The oxide of chromium gives a slight greenish tinge, which is used in some cases, but if you get on the side of the orange-red, or some of the warmer colors, it will go nicely for the majority of cases. Stains are baked into the body in a much more natural manner than if painted on as porcelain paint. On smooth enamel the porcelain paint may run towards certain points and make the tooth look spotted, but if mixed in the body itself it fuses in very evenly.

I think Dr. Baker brought out a very good point in regard to fillings in artificial teeth being too highly polished. In some cases they shine like a mirror, and defeat the very object for which they were put in. I think you get better results if you pack the gold in with a plugger and roughly smooth it off, and let it go at that, as that is the appearance of the average gold filling in the mouth after having been subjected to wear.

Dr. L. W. Baker.—I think, as father has said, Dr. Moffatt has been hitting the nail on the head so accurately, and has covered all the points in a much better manner than I could, that there is really nothing more for me to say. In regard to the point brought up by Dr. Bigelow,—that is, breaking up a set of teeth and varying the color,—I think it is a very good idea, and I am going to try one or two with that scheme. What Dr. Moffatt said about the fillings I think is partly due to the absence of the discoloration that we usually see about large fillings that have been in for some years. I intend placing a little darker stain under there, so that the discoloration will show through the enamel, which I think will give it a more natural effect.

I meant to add that this rubber-work was done by Dr. H. L. Howe. I waxed them up carefully as I wanted them, and he carried them out in the rubber, and I think you will all admit that the rubber-work is very finely done.

INTERNATIONAL DENTAL FEDERATION.

(Continued from page 54.)

INTERNATIONAL COMMISSION OF EDUCATION.

London, August 4, 1901.

THE meeting was called to order at 10.30 A.M. by President Godon.

The following members of the Commission were present: Drs. Aguilar, Brophy, Cunningham, Godon, Hesse, Kirk, Roy, Patterson, Queudot, and Rosenthal.

According to the decision of the Executive Council, the delegates of the several national societies to the London meeting were admitted as adjunct members of the commission for the session of 1901. The members admitted under these conditions are: Drs. Haderup, of Copenhagen; Witthaus, of Rotterdam; Frank, Zsigmondy, and Weiser, of Vienna; Viau and Choquet, of Paris; Baruch, Quartermann, and Huet, of Brussels; and Bryan, of Basel.

Dr. Cunningham invited the members of the commission to visit the Institute of Technology.

The secretary-general read his report to the Commission of Education in the name of the Executive Council:

GENTLEMEN AND HONORED CONFRÈRES,—The International Commission of Education, which to-day holds its first meeting, has been created pursuant to the adoption of resolutions 14 and 16 presented to the International Dental Congress. [See *Dental Cosmos*, October, 1901, page 1163.]

Following the adoption of these resolutions the Executive Council of the International Dental Federation appointed the following members to the International Commission of Education: Drs. Aguilar, Brophy, Cunningham, Godon, Hesse, Kirk, Roy, Patterson, Queudot, and Rosenthal.

Besides the aforesaid members, the Executive Council having decided that all the members of the council were to take part in the labors of the International Commission of Education, the following names should be added: Drs. Harlan, Förberg, and Sauvez.

The Executive Council also decided to admit as adjunct members of the commission, with the right to take part in the discussions, the following delegates to the Executive Council: Drs. Haderup, of Copenhagen; Baruch, Quartermann, and Huet, of Belgium; Witthaus, of Rotterdam; Bryan, of Basel; Viau and Choquet, of Paris; Frank, Weiser, and Zsigmondy, of Vienna.

The number of active members of the Commission of Education can be increased by the Executive Council.

The commission will be represented by the following officers: A president, two vice-presidents, and a secretary.

The object of the International Commission of Education is as follows:

(1) To prepare a programme of the theoretical and practical subjects that the dentist should take up.

(2) To prepare reports for the following sessions on important questions of dental education.

(3) To present at the international dental congresses the questions of greater importance.

(4) To create and organize the necessary subcommittees corresponding to the several sections of the International Dental Congress of 1900.

(5) To create, maintain, and make closer the relations between the different dental schools.

(6) In a general way, to organize anything that may contribute towards the improvement of dental education.

The functions of the officers of the International Commission of Education are:

(1) To assure and to limit the work of this commission. (2) To bring together the several subcommittees. (3) To submit to the Executive Council the resolutions of the commission. (4) To examine the propositions which are addressed to it by the Executive Council or by the federations or societies.

Now that the constitution, the working, the *rôle*, and the purpose of the International Commission of Education have been pointed out, we will proceed to examine the conditions of dental education from an international point of view. It seems, however, impossible to enter into a limited discussion without beginning by a general one.

We must constantly bear in mind that the International Commission of Education appointed by the Executive Council must not try to impose the same system of dental education in all countries. The dentists of different countries form a series of dissimilar groups from the stand-points of number and professional status, and march in the road of progress with more or less advanced ideas according to the measure of maturity of the profession in every country.

We wish to insist upon this point in order to say once again that all the international commissions, of whatever nature, must be strictly careful not to interfere with such questions as are national, and to allow the latter to be freely discussed by the representatives of the particular countries concerned. Only in this way will it be possible for the commission to exist, and to work without awakening dissatisfaction. The different commissions should act as instruments of union, as organs of progress, and their members should, for the time being, entirely sink their personalities and nationalities in order to work only for an independent and high purpose. These commissions should limit themselves to discussing questions of a large and philosophical aspect, leaving aside the individual questions.

Dental education is at the present time the subject of much thought and consideration on the part of the leading members of the profession. Only yesterday Mr. Hutchinson, the newly elected president of the British

Dental Association, discussed this question. Some time ago Dr. Kirk discussed it in a very interesting publication in the *Dental Cosmos*. While we are here, a meeting consecrated to dental education is being held in the United States. We thus see that this question is discussed the world over.

The Executive Council has preferred to let the commission work freely on its own lines, without requiring from it any reports. What you have to discuss will really comprise the following points:

First. What preliminary knowledge is necessary for the dental student?

Second. What part of the medical and scientific subjects should be taken up, and at what time of the period of training should the study of them be pursued?

Third. What is the importance of theoretical technical knowledge?

Fourth. What is the importance of practical technical knowledge?

Fifth. What are the most appropriate names for the several titles now used all over the world?

We will call your attention to the reports of Drs. Godon and Roy to the Third International Dental Congress that we have brought once again before your consideration. Also to the reports by Professor Arkövy and Dr. Guillermin; to the seventh, eighth, and ninth resolutions adopted at the Congress, and to the recent article by Professor Kirk.

There cannot be the slightest doubt that with the foregoing basis, and with the officers that you will appoint, a meeting like this will produce the results expected from it.

You have all come from distant points with a disinterested purpose, in order to occupy yourselves with important educational questions which are of the noblest and most momentous character, as upon them rests the future of the profession.

We are certain that you will know how to elevate your discussions to the level of your exalted task, and that you will work with enthusiasm for the good of the profession and for the sake of humanity.

The secretary then read the following letter from Professor Arkövy:

TO THE SECRETARY OF THE FÉDÉRATION DENTAIRE INTERNATIONALE:

DEAR SIR AND HONORED CONFÈRE, —I highly regret that on account of poor health I find it impossible to attend the meetings of the International Commission of Education. In my capacity as a member of that body I shall send to Cambridge a report which I hope will in some way forward the desired purpose.

I beg you to accept the assurance of my best sentiments.

PROF. ARKÖVY.

The following report on Dental Education, by Professor Arkövy, was then read by the secretary:

REPORT ON DENTAL EDUCATION.

MR. PRESIDENT AND MEMBERS OF THE INTERNATIONAL COMMISSION OF EDUCATION, —The Third International Dental Congress, in organizing the

International Dental Federation, had in view the establishment of dental education upon an international basis. Therefore I consider it necessary, before proceeding any further, to arrange a programme for the proceedings, and with the permission of the Commission I will take the liberty of proposing this *exposé* to serve as a foundation for further discussion, if the committee deems it fit for that purpose. Although no special directions were given by the Congress, or by the International Dental Federation to this body, there can be no doubt that the aims of the International Commission of Education are, first, to improve dental education, and secondly, to establish it upon an international basis. To the first proposition might be added, "if so desired," and to the second, "if possible."

These latter cautions show already the difficulties and obstacles most likely to be encountered in starting a question of this kind. Egotism in the national sense of the word, or rather patriotism, will make everybody inclined to consider the teaching system of his own country the best. As soon as we follow such a *manière de voir*, we will find no need for any amelioration at all, for the spirit of contempt regarding the educational systems of other countries implied in that feeling will prevent the adoption of a general basis for the teaching of dentistry. So the first inevitable step towards the advancement of this question is to discuss it from a standpoint of self-denial in the national sense, or by the adoption of a *sensiment of professional objectivity*. If we place ourselves upon such premises our *manière de voir* will be not only lucid, but also just and good for the interests of the profession. Before entering into the discussion of this subject I will ask the commission to discuss it from such a point of view.

Being well aware of the limited time at the disposal of the commission, as well as of the many questions that it will have to consider, I will try to be as short as possible and will enter into the subject *in medias res*.

The teaching systems, although numerous and considerably different in most of the countries, may be divided into three kinds: 1. The school system. 2. The university system. 3. The mixed or school and university system. In the first case the school is the teaching body and in several cases also the examining body. In some only a special surgical body confers the dental diploma (England, Australia, America). In the second case a university is the teaching body, and no special diploma is issued (Austria-Hungary). In the third case either a school or a university is the teaching body and the state boards confer the special diploma (Russia, Germany, State of New York, Holland, Denmark, and Sweden). There is not the slightest doubt that each system has its pros and cons. There is no need to enter here into a discussion of their respective values, as they are beyond the reach of an international commission, and we may fairly acknowledge that either of the systems mentioned, if properly conducted, may serve the purpose for which it is intended,—i.e., the formation of good dentists. If we review the subjects that are taught in the several systems of education alluded to, we will soon find out what the differences in this direction are.

Dr. Kabo took the trouble of collecting the data for the synoptic table

that I am joining to this report.¹ The plus signs denote the subjects that are taken up in the courses, and the minus signs those that are not. Before reviewing in a specialized manner this synoptic table, we will have to consider in the first instance the components of the present educational system, which may be divided into: 1. The preliminary education. 2. The professional education. Each of these questions contains a series of subdivisions regarding scientific and practical requirements.

Already preliminary education seems to be one of the most divergent phases of this question, because the so-called middle school system is so different in every country. For instance, in one the preliminary education is most elementary, while in others a bachelor's degree in arts, or its equivalent, constitutes the entrance requirement. It cannot be doubted that a good and a fuller preliminary education must necessarily elevate the standard of professional education. As there are no international means at our disposal by which to bring about uniformity in the problem of preliminary education, the only thing that we can do is to point out the defects of a low standard of preliminary education. Everybody will agree with me, that it is highly desirable that every dentist should be first of all a properly educated man, and after that a good professional man; that a properly educated man will make a better professional man than an improperly and defectively educated one. Therefore if any propositions are to be made for the improvement of professional education they should effect professional education at first in order to raise the requirements to the point where they stand to-day in other countries,—i.e., baccalaureate degree and gymnasium certificate. We must insist again on the desirability of raising the standard of preliminary education, if not suddenly at least by degrees, in order to suit it to a high standard of dental education.

Professional education is subdivided into (1) theoretical and theoretico-laboratory parts; (2) into a practical part connected with theoretico-practical courses. (The latter may be more properly called by adjectives "clinical" and "operative.")

There are several important questions connected with professional education, the most important being whether all the branches including medical subjects should be taught in the professional schools? whether that is the better system, or if it is more advantageous that the medical subjects should be taught in the medical schools. Dr. Ch. Godon, of Paris, in a recent publication and in accordance with Dr. Roy's opinion, expresses himself thus: "It is advantageous that the complete education should be given in the dental school, where science and medicine can be better adapted to the needs of dentistry."

In my opinion there are strong arguments against this suggestion. First of all, it cannot be denied that medical schools are more competent to teach medical subjects than other schools could ever be; secondly, if only certain parts of medicine are picked out and adapted to the study of

¹ On account of lack of space to give to this extensive table, the publication of it is here omitted.

dentistry, it would mean, if we are permitted to make the comparison, the teaching of a language by teaching by heart some sentences such as "Good-morning," "Good-night," etc. Any person that would attempt to learn a language thus, I think, would never acquire it. The plan as proposed by Drs. Godon and Roy should be abandoned.

The second important question is whether the medical studies shall be taught before, after, or simultaneously with the theoretical ones.

Dr. Godon is of opinion that a parallel teaching is preferable to any other. I am sorry I again cannot agree with Dr. Godon. The best argument for supporting a contrary view is the example of the several old universities and medical schools, where parallel studies of theory and practice do not exist. If a student would learn anatomy, *materia medica*, or pathological anatomy at the same time that he does surgery, he would soon be confused, not being able to fully comprehend either of them. In his despair he would study superficially, and could thus never become a thorough physician or surgeon. On the other hand, if he had previously gathered sufficient theoretical knowledge, he would soon find out the practical application of his knowledge. If the students should forget some of the knowledge previously acquired they could easily gain it again, keeping pace in that way with the practical teaching.

The third important question was raised by Dr. Godon when he pointed out the superiority of the teaching of the *École Dentaire* of Paris by bringing forward what he calls a most favorable proportion between the time spent on theoretical studies and that spent on practical subjects. In his statistics he shows a total of 4212 hours, out of which 980 are spent in theory, while 3266 are spent on practical subjects. By these figures we can see that the proportion between the time devoted to theoretical work and that devoted to practical work is as 7.39 is to 30.39. Even Switzerland, with its proportion of 21.44 devoted to theory and 17.44 to practice, was put in the shadow by the Paris proportions.

I am again sorry that I cannot agree with Dr. Godon. In the first place I cannot see the utility of such a compilation of figures in the solving of the problem of dental education. Does it mean that the less theoretical and more practical knowledge a dental programme contains the better it is? The astounding effect that such a statement produced upon me induced me to collect similar statistics on the medical studies of a European university. I took the University of Budapest as an instance. The table already referred to and annexed to this report shows curious figures compared with the above statement. The total medical instruction is given in five years (ten semesters), or 8632 hours, out of which 5002 are devoted to the study of theoretical subjects while only 3630 are devoted to practice. This proportion, with very little difference, is common in almost all the old universities and medical schools. Now, would anybody say that medical men are not up to their profession or that medical education, so many hundreds of years old, has always been bad because the medical man is taught more theory than practice. It will be noticed also that in any branch of scientific knowledge more theory is studied than would be necessary in the practising of it. Please do not confound scientific professions

with handicrafts. If you turn your figures in favor of practice, then a handicraft man will result.

The professional education proper, as can be seen in the synoptic tables, offers just as many differences as the various points of the educational problem. The main object in that table is to demonstrate that the theoretical subjects, such as anatomy, physiology, general pathology, chemistry, physics, and materia medica, are only taught in their applied relations to dentistry. Only in a few schools are they taught in full (Germany, Switzerland, Sweden, Austria, and Hungary), and even in those schools the subjects alluded to do not form part of the programme of examinations; as a consequence the students neglect to study them. Other subjects of the theoretical department, such as bacteriology and pathological anatomy, although of very great importance, are in certain schools completely omitted.

The practical subjects are, as a rule, much better taught in the school and mixed systems. By the university system the medical education is complete, as the candidate must be a medical graduate.

The defects in the teaching of the practical subjects may be pointed out as follows: First of all, it seems astonishing how a proper education in a medical specialty—and dentistry is such a specialty—may be imparted to students without a thorough teaching of general and operative surgery. How can a dental student comprehend clinical pathology—the main subject of his own specialty—without knowing the details of wound-healing, etc., details that are only supplied by general pathology? On the other hand, how can students of dentistry, who, even after receiving as they do in some schools instruction in oral surgery, know nothing at all about it, treat alveolar diseases, even if they were only consecutive appearances of strictly dental disorders? Medicine—the mother science—forms part of the dental curriculum only in England and in France. Austria and Hungary need not be mentioned, as there the M.D. degree is required from all those that desire to take up the study of specialties.

I do not see why a dental practitioner should be ignorant of the nature of such disorders as fainting, hystero-epilepsy, etc. But we do not want to go so far as that. On glancing at the synoptic table one will readily see with how many internal diseases the dentist should be familiar in order to fill teeth on a scientific basis and not on empirical lines.

In enumerating all these drawbacks to dental education as carried on all over the world, I have been obliged to confine myself strictly to the pointing out of all these errors, not being able, on account of limited time, to discuss the plans and ideas that should follow from these remarks and that would remedy the defects alluded to.

RÉSUMÉ.

In summing up the data and suggestions brought forward in this address, we have to keep to the distinctions made hitherto.

I. The teaching systems, different as they may be in different countries, do their service equally or nearly equally well for the professional education as soon as they are properly conducted, and aiming to a higher or the

highest standard possible to attain. So the principal point of dental education does not lie in the system adopted. (College, mixed, university system.)

II. The preliminary education has to be in accordance with the quantity and quality of knowledge to be gathered by the student later on,—viz., in subsequent years. Such being the case, he ought to be equipped with as much preliminary knowledge as may be adequate to the task in view. It has been stated, and by several schools approved, that the bachelorship in arts, or the certificate of maturity, are the best preliminary requirements for further study in the line.

III. For teaching medical subjects, there can be no doubt about the superior competency of universities and medical schools, while the competency of dental schools as institutions for an applied teaching is to be considered as far beyond doubt. In this way we are obliged to contemplate for dental education not a single but a double teaching in the subjects under consideration.

IV. The time when the theoretical teaching should take place—as has been demonstrated above—seems to be best arranged when the example of medical schools is followed,—viz., theoretical subjects precede practical teaching.

V. Proportion between the time spent in theoretical studies as opposed to practical ones. If there should be any such definitely established, a considerable disproportion between the two ought to be arranged, taking into account that a much larger amount of theory is required to a thorough practice in a scientific profession.

VI. If any improvements were intended to be made upon the present dental education—and there is a sensible demand for it—they should be directed towards subjects of teaching hitherto partly or entirely neglected, or insufficiently cultivated; as such may be considered, pathological anatomy, bacteriology, internal diseases, anatomy, physiology, histology, general pathology, chemistry, physics and materia medica, general surgery, and surgery in general. How much time, or how much *more* time, should be allotted to each of these subjects is a matter of private concern for the individual schools and teaching bodies.

VII. The preceding point has already indicated the necessity of extending the duration of the curriculum. So many more subjects and so many more hours of lectures as would be required in adopting the above improvements would involve, in an approximate estimation, the extending of the curriculum for one year (two semesters).

VIII. In connection with that point, and in order to meet the exigencies of practice, it would be advisable to establish an extra six months' hospital or private training, *after passing* the professional examination, approbation, or whatever constitutes the finishing of studies. Such an arrangement is necessary and is already in vogue at some European universities for medical practice, amounting to a full year's hospital or clinical training.¹

¹ I wish to be understood that training is not to be confused with teaching in practical subjects, the former being subsequent to the latter

IX. As a general observation it must be mentioned that odontotechnical lectures—theory and practice, including especial training—require more attention and time in schools of the mixed system, and still more in the pure university system. The idea of a separate training-school in dental mechanics, as suggested by Mr. G. Cunningham, Cambridge, England, is a good one, as it would afford such an opportunity to dental students as hospitals and university clinics give to the medical student, or rather young practitioner not yet in independent contact with the public. But the guidance in such a place ought to be a perfect one.

X. The requirements, if raised to such an extent, are bringing the dental student so close to the medical that there is only a further step necessary to turn him into a medical man. We cannot conceal that there is a strong tendency, at least in Europe, and also some half-suppressed groans were audible from the "other side of the water," for the attainment of a higher professional qualification, even of a university degree.¹ Slowly, but I believe surely, the profession will arrive one day at a point where there will be no difference between the dentist, as a professional man, and the medical man.

We were delegated and are assembled to do our best and to confer as much as we are able to the advancement of the interests of the dental profession. There is not one item among them of such high importance as is the professional education of succeeding generations. There can be no nobler task and no more sublime mission than the one bestowed upon us. As soon as we acquire information about the conditions existing in that educational line we could not, and I am sure we would not, restrict the frank and candid pronouncing of our conviction, disregarding whether this would affect feelings or not. We have seen there is a good deal to be done in that way; if you agree with my disclosures as demonstrated in this address I am convinced you will do a great service to the profession. We have no power, no jurisdiction at our disposal, but nobody will doubt that there is an overwhelming power in a pronouncement of a committee invested with an international character.

If your decisions should have no more effect than that of giving indications as to how dental education should be carried on, and what development and evolution it should undergo in future, then you have performed your noble task in a worthy way.

and differently conducted in its realization. This kind of teaching is supplied by lectures and demonstrations and can be imparted to a large audience; while the training is carried on, under guidance, at several places (hospitals, clinics, private practice), and the pupils can only be grouped in these cases in small numbers,—otherwise a training would be a failure, and to the detriment of the students.

¹I fully agree with the views of Mr. Thomas Geddes, M.D., as developed in "A Plea for the Specialty of Dentistry and for University Recognition." *Journal of the British Dental Association*, July, 1901.

After the reading of Professor Arkövy's report the following communication by Dr. L. Guillermin, the Swiss delegate to the International Dental Federation, was read by the secretary:

DR. GUILLERMIN'S COMMUNICATION.

Considering the difficulties met with in the liberal professions one is inclined to question whether the governments and professional societies are following a wise policy by facilitating in an extra liberal manner the access to the different professions. The attention of those bodies should rather be directed to the improvement of methods and to the selection of candidates.

The difficulties alluded to are most detrimental from a professional as well as from a social stand-point. In the professions of law and medicine there are men who should be at the top of the ladder, as far as science, honor, and dignity are concerned; but instead, we see them mixed up in the worst kinds of compromises, becoming the cause of scandals whose effects are felt by the entire profession. As the result of practices of this kind the public suffers and the practitioner becomes completely ruined. We are rapidly reaching a very plethoric state in dentistry, and for the general interest, as well as for the individual interest of the young student, one should not encourage him unless his qualities fit him for the profession that he wants to follow. It devolves on the parents, professors, and educators to make the selection while there is time to prevent the public from doing it when it is too late.

At the present time success does not always crown the efforts of the most deserving graduates, because they are lacking in one or more of the numerous qualities required for the practice of our art. How many lamentable confidences have I not received during the last twelve years of the thirty-two of my professional life.

How should a candidate be recognized as being fitted for the practice of dentistry? Manual skill and well-developed intellectual faculties seem to me to be indispensable qualities for the formation of a good dentist. Dexterity and intelligence constitute very high requirements, but nevertheless, they only represent the minimum that could be demanded.

In connection with this idea I must say that I admire the creation of the Institute of Dental Technology by Dr. George Cunningham, as there it can be easily ascertained what the disposition of the student is, and he himself can find it out, as no efforts are made to conceal the truth from him. We have only considered the natural gifts of the individual; their presence in a given person will assure the successful completion of the important and difficult studies leading to a diploma.

An idea which is making its way into Switzerland is that in the near future the degree of doctor of medicine will be required for the practice of dentistry, this is already the case in Italy and in Austria; in France one of the most illustrious representatives of dental science, Dr. Godon, has recognized this necessity by taking his degree in medicine. In this country we see quite a number of dentists, holders of the medical degree, enlighten-

ing with their intelligent activity the most obscure problems of our art. But in any case (doctor of medicine or *médecin dentiste*) complete secondary studies are required. These comprise at least a knowledge of Latin (*maturité reale suisse*) if not that of Latin and Greek (*maturité classique*). The obtaining of this diploma, which corresponds to the French baccalauréat degree, is in the majority of cases a proof of normal intellectual faculties. After this a year is spent in scientific studies (physics, chemistry, botany, and zoölogy), and if finished successfully it confirms the capacity of the candidate. These are the preliminary requirements in Switzerland, and only when completed do the medical studies properly speaking begin. It remains to ascertain the manual skill of the candidate. For this purpose he could be made to spend two hours daily in prosthetic work in the laboratory of a dentist or in a dental school in conjunction with his medical studies. At the end of this year an examination would decide the ability of the student, and if his manual skill be not clearly demonstrated, he could only be a physician. It should be demonstrated that in order to make a good dentist, it takes, besides the necessary intelligence, more time and dexterity than to make a good physician. I say physician, not surgeon. Once at this point, the student would devote a few hours every week to dentistry. After obtaining the medical degree he would take up dentistry exclusively during four semesters, and could then be considered as being a dentist. It is noticeable that the majority of physicians who want to become successful practitioners spend two years as internes in the hospitals. These two years would be represented by the dental internship.

Dentistry, or stomatology as you want to call it, would then become an integral part of medicine, a specialty, just as ophthalmology, laryngology, gynecology. In fact, is there any medical specialty in which the practitioner is in closer daily relations with the general state of the patient than in dentistry? Is it not necessary to have a large medical experience in order to administer general anæsthetics? Is it not sometimes necessary to constitute a general treatment previous to the buccal operations, and is not one sure of failures if dental operations are performed upon anæmics, rachitics, malarials, syphilitics, diabetics, or neurasthenics without the previous administration of iodides, phosphates, quinine, etc.?

The analysis of normal and pathological saliva, the diagnosis of neoplasms, auscultation, the necessary authority in order to obtain from the patients information as to the period of pregnancy, the catamenial state,—do not all these conditions belong essentially to the province of the medical art? It would be necessary to review the entire nosography, all the physiological states, in order to fully comprehend the constant relationship between the oral cavity and the organism. There is no doubt that the dentist acquires the knowledge and necessary authority, but only after years of practice and hard and difficult supplementary study.

We are persuaded that this solution, the obtaining of the degree of doctor of medicine, is the only means by which dentistry can reach that dignified position, that social elevation, that it partially possesses through the efforts and sacrifices of Godon, Dubois, Brasseur, and of others, and

I am mentioning only the French ones. Besides, the candidates for the diploma of *dentiste médecin* would not remain any longer satisfied with the teaching of the professors; they would then be in a position to do original work. What would become of the dental schools? They would rid themselves of the present scientific department, which I must say is wonderfully organized.

On account of the growing importance to which this will attain, the schools will be transformed into true schools of medicine, with their professors, their dissecting-rooms, their laboratories, and their hospitals. The struggle with the official schools will not be possible any more, nor the students be called upon to attend the lectures therein given. It seems to us that the dental schools should become especially *dental*, and should lose the character of schools of stomatology that they possess at present. They should teach exclusively prosthesis and operative dentistry, which in themselves constitute a wide field. This transformation will not take place at first, but we believe it to be unavoidable, and either the new dental schools or the old ones should force it. In the mean while we believe that nine to ten semesters of study should be required, provided that this measure is adopted by all the schools. The ideal would be that a complete dental school, an autonomous one, with its professors and its own organization, should be annexed to two or three of the principal hospitals in the great cities, and to one in the smaller ones. They would be the analogue of dispensaries devoted to other medical specialties.

Regarding the international federation of dental schools, I must say that the majority of professors of our Swiss schools reserve their opinion by adopting at present this measure which can only be consequent to the adoption of a uniform programme; they fear to make the schools lose their individuality. The differences in method, the predominance or equality of the theoretical and technical elements, are dictated by usage. The general ideas, the aspirations of the different countries, produce a diversity that tends to bring about a healthy emulation between the schools and causes the different institutions to pursue special studies, and this to the benefit of the profession.

I will add to these considerations, which reflect in a general way the ideas admitted in our teaching spheres, as well as my personal convictions, copies of two reports, one from Professor Billeter, professor at the Faculty of Medicine of Zurich, and also at the dental school of this city, and the other from Professor Métral, Médecin Dentiste, professor at the *École Dentaire de Genève*.

Please present to my honorable colleagues of the International Dental Federation my regrets for my inability to be present at their meeting.

REPORT BY PROFESSOR BILLETER.

Dentistry is a specialty of medicine, and hence the preliminary education for the stomatological candidate in Switzerland is as follows:

1. A *gymnasium* education which is equivalent to the upper classes of the French *lycée* and altogether similar to that of the dentist.

2. A *propedeutique* education, similar to that of the physician.

3. Now, as far as the professional education properly speaking is concerned, the same attention is paid to the technical as to the operative teaching. As our art has made considerable progress in metallurgy, ceramics, and surgical prosthesis, it will be necessary that the curriculum should embrace all these specialties. As a consequence of these facts, professional education will require in Zurich four semesters instead of three, as is the case at the present time.

It is necessary that in all countries where dental schools exist at present all these specialties should be taught. But, as far as the details of the teachings are concerned the liberty of arranging them should rest on the individual countries.

REPORT BY PROFESSOR MÉTRAL.

I believe in bringing about as far as it is possible uniformity in all the dental schools.

The time devoted to the study of dentistry should be the same as for medicine,—i.e., nine semesters, four to be devoted essentially to theoretical studies, general education, natural sciences, medicine and surgery, and five semesters to be devoted altogether to the practical subjects and to the theoretical studies which concern them directly.

A course in bacteriology would be introduced into the theoretical part of the curriculum and the students would be required to take a course in auscultation. The practical side of dentistry would develop advantageously through specialization of the subjects of anæsthesia and orthodontia.—*Dental Cosmos*.

(To be continued.)

Editorial.

FROM TRADE IDEAS TO PROFESSIONAL IDEALS.

THE claim of the INTERNATIONAL DENTAL JOURNAL to the attention and support of all practitioners follows from the fact that the INTERNATIONAL is the only dental magazine in the country conducted by members of the profession solely for the aid and advancement of the profession. Every other magazine is controlled and published by a dental bureau, advertising and having for sale an extensive line of dental appliances. Against these magazines no criticism is directed or intended. Certainly a manufacturing company which combines in its magazine advertisements of its wares

with communications and editorials of use to the profession does so with perfect propriety. But, on the other hand, it is no less evident that every learned profession should conduct its own magazine for purely professional purposes. No taint or suspicion of trade ends should attach to this magazine; no possibility should be allowed of professional opinion being warped towards the advancement of sales, and the advertising section should be open on equal terms to the large dealer and to the small one with perhaps half a dozen valuable and unique specialties.

Time was, within the memory of many practitioners now living, when trade ways and ideas dominated the dental profession; besmirched its character, discredited its followers, and made ridiculous the just claim of dentistry to an honored place among the specialized branches of medicine. But from motives of self-preservation, if for no other, the dental profession began to separate a generation ago from the trade idea. Repute and prestige were thereby gained for all dentists, and an obligation was imposed upon them to make this divorce between the trade and the profession absolute and unqualified, both for their own sakes and for the generation that follows.

The INTERNATIONAL DENTAL JOURNAL, published without capital, dependent for its enlargement and continued success upon subscriptions to its issues, comparing favorably, it is believed, with any magazine now published in the value of its reading matter, communications, and editorials, offers, it can hardly be denied, an opportunity to every practitioner to subscribe, at but little expense to himself and with large benefit to the dental world, to the principle to whose triumph this magazine is dedicated.

*

WHERE AN EXPLANATION SEEMS NECESSARY.

THE fifty-two dental colleges in this country represent the elements in the dental profession that are constantly active in promoting its interests, intellectually and professionally, and the Association of Dental Faculties, which is composed of these fifty-two colleges as members, necessarily feels a deep interest in all that concerns its own welfare and that of the main professional body which it, in part, represents.

Several years since a committee was appointed by a resolution introduced into the Association of Faculties, to be called the Foreign Relations Committee. This was to be a standing committee, but the members were to be appointed or reappointed each year, and not elected as had been usual with the regular standing committees. The original intention was that this body should examine into the character of all foreign schools, and appoint advisory boards in all foreign countries to aid in giving information and, by endorsement of individual applicants, prevent unsuitable persons entering upon advanced standing in our American dental colleges. This praiseworthy position has been continued to the satisfaction of all concerned, and had it rested there, there could have been no just cause of complaint. This, however, was regarded by some as narrowing the work, and, limiting it to this, prevented future enlargement of its sphere of labor. The annual reports of this committee not only began to be voluminous, but constantly advised extension of its labor, and frequently assumed an authority not originally delegated to it. The Faculties complacently agreed to this, or quietly offered no direct opposition, until to-day the main body has been practically relegated to a subordinate position. The committee has so enlarged the scope of its labor since its first appointment that the majority of the main body have had difficulty in keeping in touch with its erratic movements. The result is that its reports have been repeatedly adopted without careful consideration. Each new presiding officer of the Faculties seems to deem it his duty to reappoint this committee, paying very little attention to the fact that the most important qualification for membership on it should be long attendance and active participation in the work of the body.

At the recent meeting of this Association at Milwaukee, the work of this Foreign Relations Committee occupied much of the important time of the Faculties. It grew eloquent in detailing the facts accumulated during the year, and the chairman forcibly advocated the importance of the Association entering actively into the arena of legal prosecutions of fraudulent colleges. The work of Consul Worman was enthusiastically portrayed, until the members became equally enthusiastic and voted an assessment of fifty dollars upon each of the colleges, and some few increased this to one hundred dollars. Consul Worman was naturally well satisfied with this, as he felt that at last some besides himself would help to bear the heavy expense to which he had voluntarily subjected himself,

in collecting testimony to be used in prosecuting dealers in fraudulent diplomas in the State of Illinois. He remained over in Chicago after the meeting, incurring heavy obligations under the supposition that between the Faculties and the National Dental Association some provision would be made to reimburse him for the outlay. It is to be hoped that this has ere this been done, but up to a recent period nothing had been attempted in this direction.

The Foreign Relations Committee met at Chicago, at the Palmer House, on November 9, 1901, to consider the complex questions connected with and growing out of the expansion of the committee's work. This necessarily involved travel for its members, with one or two exceptions, of from five hundred to a thousand miles at a heavy expense, which must eventually be met by the colleges. The result of this conference is embodied in a circular issued at Buffalo, November 15, 1901. This circular is addressed "To the Deans and Representatives of the Dental Colleges Members of the National Association of Dental Faculties." The writer of this has been a delegate to represent an important college since he assisted in organizing the Faculties in 1884, but for some unexplained reason he was not honored with a circular. Possibly it may have been lost in the mails. He, however, secured a copy and extends his thanks thus publicly to the kind donor for the service rendered.

It is not an uncommon occurrence for committees and associations to be inconsistent in their rulings, but it has not often been the writer's experience to find a committee travelling a thousand miles with a single object in view, perpetrating a series of resolutions and other acts thoroughly inconsistent with each other and in direct opposition to the best interests of the association the said committee was supposed to represent.

From a series of eight resolutions passed at that meeting, the two following are quoted, italics ours:

"Resolved, That in the opinion of the Foreign Relations Committee, while it should extend its moral support to every reform movement, it is not the function of the National Association of Dental Faculties to prosecute violations of the State dental laws or irregular acts of State dental examining boards."

The fifth resolution reads as follows:

"Resolved, That the Foreign Relations Committee, under the power granted by the National Association of Dental Faculties,

will authorize the prosecution of fraudulent colleges whenever and wherever their existence is demonstrated to them."

It is presumed the committee draws a wide distinction between violators of State dental laws and fraudulent colleges, but to the average mind the college that issues fraudulent diplomas is a violator of dental law. It would hardly seem necessary to undertake such an expenditure of time, money, and travel to frame such absurdly antagonistic resolutions.

The committee, after thus laboring and arranging to pay certain expenses in a certain way, called in consultation two eminent citizens of Chicago and one in the same city representing the State Examining Board, supposed at this period to have been reformed and purified. It is stated that when the gentlemen met with the committee, "each approved the action taken and accepted positions as members of the Prosecuting Committee, Dr. J. N. Crouse being designated as chairman. . . . The active co-operation of Consul Worman and the members of the Foreign Advisory Boards in the collecting of necessary testimony was assured."

The Foreign Relations Committee has, therefore, placed the whole matter of service in the hands of three parties, two of whom have not the slightest connection with the Association of Faculties, and the third is on record as openly opposing this body before the Illinois State Dental Society, and has never, to the writer's knowledge, been an active participant in its proceedings. The most prominent on this prosecuting committee, and who will be expected to take the active part in the prosecutions, has never omitted an opportunity to denounce dental colleges and the Association of Faculties, and in July, 1901, he took occasion, just prior to the meeting of the Association of Dental Faculties at Milwaukee, to denounce this body in unmeasured terms. That such a person should be appointed to represent the Faculties passes the writer's comprehension. The proceedings of this Foreign Relations Committee, as detailed in this circular, are humiliating to the last degree.

The allusion to Consul Worman and to the Foreign Advisory Boards may be based on correct information, but from what the writer knows of the way Consul Worman's report and voluminous testimony has been treated, it is extremely unlikely that he will labor very assiduously on behalf of the committee or the legal authorities of Illinois.

The next meeting of the Association of Dental Faculties is some months away, but it does seem that in the mean time the members should carefully consider the advisability of either reorganizing this Foreign Relations Committee or removing it entirely from the list of standing committees of this body. It is, at present, a menace to the best interests of that organization, and is gradually, but surely, submerging this educational association into a sea of legal quarrels and endless expense, the end of which no man has sufficient prescient knowledge to determine, or against which to provide means of protection.

Bibliography.

STUDIES OF THE INTERNAL ANATOMY OF THE FACE. By M. H. Cryer, M.D., D.D.S., Professor of Oral Surgery, Department of Dentistry of the University of Pennsylvania. The S. S. White Dental Manufacturing Company, Philadelphia, 1901.

With this altogether too modest title the author ushers this book into the professional reading world. In the reviewer's opinion a more pronounced title would have been a better description of the real work of investigation made so laboriously and long into the true anatomy of the jaws and contiguous parts of the human subject. It is certainly true that Dr. Cryer has opened up new avenues of investigation long since supposed to be closed, or, in other words, that the last had been said in regard to the anatomy of the head, and that nothing more could be learned in this direction. The contents of this book prove very conclusively that it is never safe to rely unreservedly upon authority, for with new methods of procedure must come original investigations, with results possibly not in harmony with the older thought. The author says of this labor, "This investigation completely overturned the writer's conception of what was meant and what ought to be meant by the term typical. There is, doubtless, a typical or typical form for each bone, but it is not often found in nature. If we were to photograph a thousand temporal bones, for example, and make a com-

posite of the entire number, the composite would properly be accepted as figuring the typical temporal. . . . This, to the writer's view, is strong testimony that the typical bone is ideal."

Much of this work has been made familiar in dental organizations in this country, through various papers read by the author and profusely illustrated by the lantern, but beautiful as these have been recognized to be, they did not exceed in clearness of detail the illustrations in this book. These certainly have been brought out with a perfection rarely excelled. This applies equally to the entire pictorial exhibit, extending to one hundred and fifty-one illustrations.

After "Introductory" and "General Considerations," the author takes up the critical examination of the lower jaw and thoroughly explains its anatomy and the connection of the teeth with the cancellated tissue. Fig. 8 very beautifully exhibits "the nerves and vessels within the cribiform tubes as they pass to the roots of the teeth."

The "Maxilla, or Upper Jaw," is next considered, and the variations are fully described, especially those connected with the antra. These variations are of especial importance to the practising dentist, for, relying upon the general anatomical descriptions, he will frequently be led into serious error in attempting operations upon these cavities. This portion of the work has never been better done; in fact, so far as the reviewer is aware, has not even been attempted to an equal extent, although some efforts have been made in this direction.

There has been so much wild talk of certain teeth being doomed to extinction, and even some writers have calmly considered the possibility of the human race becoming edentulous through the loss successively of the third molar, followed by the lateral and eventually the entire series, that it is quite refreshing, as well as a statement of a truth, when the author says, "Many skulls of the Caucasian races have only rudimentary third molars; in some skulls the third molar is entirely lacking. This has been received by many writers as evidence that the third molar teeth are being lost entirely, and as an indication that men will eventually become more or less edentulous. The author is of the opinion that the teeth of man are as good and fully formed at the present time as they were three thousand years ago; for if ancient Egyptian skulls are carefully examined, the rudimentary condition or complete

suppression of the third molar will be found quite as frequently as in skulls belonging to relatively the same class of people to-day."

The impaction of teeth is well described and perfectly illustrated. This impaction so frequently leads up to serious reflex lesions that the subject-matter might well have been extended into some description of the pathological relations connected therewith, but if that were not in harmony with the intentions of the author, a more complete method of diagnosing, especially in connection with the third lower molar, would enable the inexperienced to more readily find these misplaced teeth.

The author does not regard this work as a finality, but simply the beginning of still more laborious investigations. If he continues in this direction through other portions of the human subject, it will necessitate a revision of the anatomical studies of the earlier days made in the dissecting-room.

Some portions of this work of the author have been incorporated in Gray and other anatomical books.

The publishers have spared no effort in making this book worthy the subject.

ANATOMY, DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.S., Fellow of the Royal College of Surgery, etc. Edited by T. Pickering Pick, F.R.C.S., and Robert Howden, M.A., M.B., C.M. A Revised American from the fifteenth English Edition. With seven hundred and eighty Illustrations, many of which are new. Lea Brothers & Co., Philadelphia and New York, 1901.

A review of this work would hardly be attempted by any one at this late date and in its fifteenth edition. Gray has become classical in medicine, and any follower of the healing art who fails to possess a copy or, at least, to be familiar with it cannot be considered quite up to the high standard of his profession.

Each edition of this work seems, however, slightly better than the next preceding, notwithstanding that it would appear almost an impossibility to add materially to it.

The section on Embryology has been given careful revision in this edition and "its text rendered more intelligible by the introduction of some sixty additional illustrations after His, Kollmann, Duval, and others."

It would seem difficult to add to the splendid illustrations for which Gray is celebrated, but this is continually being accomplished; and as the rapid sale necessitates frequent revision, the series will be added to in each edition in the future, materially increasing the value of the text.

The only objection that can be made to these constant additions is that the book is growing unwieldy, and, as a text-book, becoming more and more difficult to handle. The present edition numbers twelve hundred and fifty-seven pages. This applies only in the character of a text-book, for as a book of reference size is not important; indeed, adds to its value to the seeker after detailed information.

It is almost unnecessary to add that this edition is fully equal to all those that have preceded it in the care taken by the American publishers in having it presented to the medical reading public in the most satisfactory manner.

Domestic Correspondence.

INCIDENT OF OFFICE PRACTICE.

OAKLAND, CAL., December 18, 1901.

TO THE EDITOR:

SIR,—I enclose a little incident of office practice:

After the completion of a very protracted gold-filling operation, my patient, a skilled accountant, said that he had been keeping tally on the number of blows I used with my Snow and Lewis automatic, after applying each pellet of H. & R. No. $\frac{1}{2}$ A gold. The number ranged from thirty-one to fifty with an average of thirty seven.

This may be of interest to those who are considering the force necessary to properly consolidate a gold filling. For my part I was quite unconscious of the blows, and used only what I thought necessary to properly consolidate the filling.

Very truly yours,

JOHN S. ENGS.

Miscellany.

CONCEALED GOLD BRIDGE ATTACHMENT.—“A method of bridge attachment designed to take the place of a shell crown, an open-faced crown, or any other kind of crown, in the six anterior teeth, when entirely or comparatively free from caries.”

This method is especially desirable in cases where all the central and lateral incisors are to be replaced, making the attachments to the cuspids. Devitalize the pulps, and fill the root-canals as usual. Bevel the lingual side of the tooth to be attached down to the incisive edge, allowing a liberal space for the thickness of the backing, to prevent the inferior incisors from impinging against it.

Take an impression of the prepared cuspid in either plaster or mouldine and pour in fusible metal. Using this as a die, swage the backing of No. 30 gauge, pure gold plate by driving the die into a soft pine block, cross-section. Make the backing large enough to cover the entire lingual aspect of the tooth and to overlap well the edges, particularly on the mesial side. This backing may or may not extend beneath the gum, as is deemed best by the operator. Through this backing insert a platinum or iridio-platinum wire, gauge about 15; place on the tooth and allow the post to extend well up into the canal. Fasten the post and backing together with Parr's wax, remove, invest and solder slightly together with 22- or 20-carat solder; replace on tooth and burnish perfectly, especially around the edges. Adjust dummies, wax together, remove and invest again, and flow with 20-carat solder. With a little finishing and reburnishing, the attachment is ready for use. In this class of attachments, as in gold inlay fillings, the edge adaptation and burnishing are very important, and must not be neglected. Well-nigh perfect edges may be obtained in this way, with proper manipulation of the pure gold backing. After the bridge is set reburnish all the edges.—H. M. KIRKE, *Dental Digest*.

[It is a serious question whether “this method is especially desirable in cases where all the central and lateral incisors are to be replaced, making the attachments to the cuspids.” The curvature of the arch produces a leverage when pressure is put upon the centrals that no attachment to the cuspids can withstand.—McCLAIN.]

SOAPSTONE.—Pulverized soapstone has several uses in the dental office. Have a quantity of the powder in a wide-mouthed bottle on the operating-case. A little rubbed on the dam where the holes are punched will make the application easy. The powder applied to the surface of cement fillings prevents its sticking to the instruments. In the laboratory, a pepper-box of the powder from which to sprinkle it on plaster after setting in the lower part of the flask sufficiently to handle makes a good separating medium. The powder sprinkled into the shoes, if a little tight, makes them feel larger.—JOHN G. HARPER, *Dental Register*.

TO PREVENT UNSOLDERING.—In cases where an investment is not indicated, it is frequently desirable to observe some precautions to avoid the unsoldering or re-fusing of parts previously united, which is usually accomplished by the mere presence of the investment itself when such is used. This may always be very easily prevented by coating or treating such surfaces with crocus (ferric hydrate), or a liquid solution of plumbago, or whiting in water or alcohol.—HART J. GOSLEE, D.D.S., *Items of Interest*.

COTTONOID STRIPS WITH THE RUBBER DAM.—In using the rubber dam in the mouth of a patient, a cottonoid strip placed between the rubber and the lower lip is far superior to the napkin or muslin, and for the following reasons:

It adapts itself more readily to the anatomy of the parts, and hence lies in position without being held by a strap or, indeed, any precaution for retaining it in place.

It is soft, yielding, downy; consequently it has a more "kindly" feel to the tongue and lips.

It absorbs surplus saliva, and yet it does not need to be so frequently changed, if it is necessary to change it at all; therefore the annoyance of being compelled to stop our work in order to move a wet napkin along or replace it with a dry one is avoided. It supplants the saliva ejector in many instances, and it can be dispensed with altogether by substituting aseptic absorbent cotton, casting it aside as soon as it becomes full of saliva and renewing with fresh cotton.—ALPHONS IRWIN, D.D.S., *Items of Interest*.

Current News.

NEW JERSEY STATE DENTAL SOCIETY.

THE Committee on Exhibits desires to announce that at the thirty-second annual meeting of the New Jersey State Dental Society, to be held as usual, in the "Auditorium," Asbury Park, July 16, 17, and 18, 1902, the large room, which is especially adapted for exhibition purposes, will be devoted exclusively to the exhibits. Every advantage is here offered for a great display, with all the conveniences necessary for such an exhibition.

This will undoubtedly be a "big year," and especially so from the exhibit stand-point, as many exhibitors have already written to secure the space generally selected by them.

A great inducement offered to all exhibitors is the fact that at last year's meeting over five hundred dentists registered at the entrance to the Exhibit Hall.

The names of the exhibitors selecting space prior to the programme going to press will be mentioned therein, together with the nature of their display.

It is earnestly requested that those desiring space communicate with the chairman at an early date.

FRANK L. HINDLE,

Chairman of the Committee on Exhibits.

NEW BRUNSWICK, N. J.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

At the annual meeting of the Odontographic Society, held Monday, December 16, 1901, the following officers were elected for the ensuing year:

President, C. N. Johnson; Vice-President, W. T. Reeves; Secretary, Frank H. Zinn; Treasurer, Geo. N. West.

Board of Directors.—Geo. B. Perry, F. E. Roach, L. O. Green.

Board of Censors.—F. B. Noyes, W. Girling, D. A. Hare.

Programme Committee.—C. E. Bentley, L. S. Tenney, H. J. Goslee.

The Fifteenth Anniversary of the Society will occur in December, 1902. It is the intention of the Society to celebrate the event by giving a rousing Clinic, extending over two days, and a meeting that will be memorable in its history.

Prominent members from all parts of the country are to be invited to be present. The Programme Committee have already commenced plans for one of the most notable meetings that has ever been held in this country.

FRANK H. ZINN,
Secretary.

100 STATE STREET, CHICAGO.

A BILL TO ADD DENTAL SURGEONS TO THE NAVY.

In the Senate of the United States, January 8, 1902, Mr. Pettus introduced the following bill, which was read twice and referred to the Committee on Naval Affairs:

"A BILL TO ADD DENTAL SURGEONS TO THE MEDICAL CORPS OF THE NAVY.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to the Medical Corps of the Navy there shall be attached a corps of dental surgeons to serve the officers, enlisted men, and boys in the naval military service and training schools, which corps shall not exceed in number the proportion of one to one thousand authorized by law for said service and schools.

"The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances to promotion within said dental corps the grades named shall correspond to the grades of the Medical Corps designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

"SEC. 2.—That original appointments shall be made to the grade of assistant dental surgeon and the appointees must be citizens of the United States, between twenty-three and thirty-three years of age, graduates of standard dental colleges, with not less

than two years' subsequent experience in practice, of good moral character, of unquestionable professional repute, and shall be required to pass a satisfactory physical and professional examination: *Provided*, That there shall first be selected a member of the dental profession who is a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations herein provided for, and for otherwise assisting in organizing, equipping, and supervising the operations of the corps, who shall be first appointed to the grade of dental surgeon."

SOUTHERN BRANCH, NATIONAL DENTAL ASSOCIATION.

THE fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, February 18, 1902. The Association will be in session four days. Atlanta is now the best located and equipped city in the South for holding such a meeting. This fact assures a large attendance.

The Southeastern Passenger Association will give a rate of one and one-third fare for the round trip on the certificate plan. They will also give an extension of ten days after the close of the meeting so as to enable those attending the Association to visit the Charleston Exposition. A cheap round-trip ticket from Atlanta to Charleston will be on sale. An effort will be made to have a special train for the dentists. Delegates living beyond the territory of the Southeastern Passenger Association can purchase a winter tourist ticket to Charleston by way of Atlanta, as these tickets have a stop-off privilege of fifteen days at Atlanta.

H. H. JOHNSON, *President*,

Macon, Ga.

C. L. ALEXANDER, *Corresponding Secretary*,

Charlotte, N. C.

THE International Dental Journal.

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No. 3.

Original Communications.¹

WHAT SHOULD BE THE RELATION OF OUR GOVERNMENT TO THE DENTAL PROFESSION?²

BY DR. CHARLES F. ALLAN, NEWBURGH, N. Y.

It is perhaps not too broad a statement to say that the healing art stands nearer to the individual, is of more importance to his well-being, and consequently to the well-being of the State, than any or all of the learned professions.

The head of the nation, the governor of the State, the legislator in Congress, the judge on the bench, each is dependent at times on the doctor's good services, and whether he is to die or in the future be a tower of strength to the nation or the community he serves depends solely on the ability and earnestness of the physician in charge.

This dependence of the individual, and consequently of the State, which is but the aggregation of its individuals, on the members of the healing art is recognized more or less officially by all civilized governments in Europe; and exceptional ability and great discov-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before The New York Institute of Stomatology, November 8, 1901.

eries, or new methods of practice promising great returns, are rewarded in these governments by titles or memberships in orders which have very practical significance and value to the medical men so honored.

The great physician is always considered as honoring and ennobling his country, and the heads of the State are always ready to do him honor.

Moreover, there are international features connected with the support foreign governments give to men of science, and especially to those medically educated; and it is always the case at the meetings of the international medical congresses in Europe, that more or less the gathered physicians from other lands are made the guests of the nation visited, and are officially honored.

At the meeting of the International Congress in Russia, but a couple of years or so ago, the delegates were welcomed officially to the land of the Czar; social and peculiar privileges were showered upon them; the facilities of the state railroads were in some instances put at their disposal free of any expense, and in many ways the visitors were welcomed as the guests of the nation.

At the meeting in Rome, several years ago, the King of Italy and his cabinet took great pains to emphasize their official welcome, and many social functions were given in their honor. It was the same in Berlin a few years ago, and in Paris last year, the visiting physicians receiving special honors and being welcomed largely as the guests of the nation. These nations go on record as if to emphasize, in the beautiful words of Samuel Smiles, "The career of a great man remains a monument of human energy, his thoughts and acts survive and leave an indelible stamp upon his race. Thus the spirit of life is prolonged and perpetuated, moulding the thought and will and thereby contributing to form the character of future generations;" and thus it is that this "great man," so honored, honors the country that honors him.

This is the spirit of the civilized countries of the world, with the exception, sad to say, of our own government, which, instead of giving honor and a recognition of ability, alone of all the great nations, taxes medicines, surgical and dental instruments and supplies coming from abroad, and, as much as the government can, makes a Chinese wall against the adoption and use of methods, instruments, and materials proved of value in other countries.

The United States has the unenviable distinction of having a

tariff duty on dental materials and instruments higher than that of any other country, though our manufacturers have less to fear from competition than any in the world.

This, as has been well said, "has been brought about by the manufacturers acting as doctors for the needs and interests of the dental profession." It must be conceded that free trade in dental and surgical instruments is certainly in the best interest of science, and works for the benefit of humanity; yet the United States leads the world with a duty of forty-five per cent. on dental instruments, while Great Britain, France, Germany, Belgium, Canada, and Mexico have no duties, and in no other country is a higher duty than ten per cent. imposed. In fact, the tariffs of all the different countries of the world added together are but a trifle, if any, more than that imposed by the United States alone. I emphasize this because I feel that it is not generally understood how alone the United States stands in the imposition of this onerous tax on science and the healing art.

The markets of the world are practically free to the manufacturers in this country of dental goods, and all over the world our manufacturers compete, seemingly on even terms, with the cheap, or perhaps I should say "pauper labor" of European countries; and presumably making their greatest profits on the higher rates charged American dentists. This too, in the face of the fact that our government is now facing a surplus of seventy million dollars and more per year, and has no need of the revenue. Surely, it is high time that our government ceased this oppression.

From the nature of our institutions it is probably impracticable for our government to reward great professional merit and large scientific attainments in the way they are rewarded in the countries of the Old World; but it is not impracticable to take off oppressive taxes and show, at least negatively, that the government is not in opposition to professional success and scientific progress.

We do not ask favor, we only want hands off by the government so that we can buy medicines, materials, and instruments in the markets of the world where we can get them cheapest and best, so that we can take advantage immediately of pharmaceutical, scientific, and mechanical aids to our profession.

As a nation we have been advancing in manufactures with giant strides the past few years; pure science, scientific researches made for scientific purposes alone have been applied by our manufac-

turers in most practical ways, making vast economies, so that in many lines we now lead the world; but possibly in the domain of applied chemistry we still have to acknowledge the lead of German chemists.

In the manufacture of aniline dyes Germany in the last decade has practically wrested the whole business from England, business amounting to many millions of dollars, and precedence still has to be given to the German manufacturing pharmacists; but every ounce of chemicals entering our country has to pay tribute to our paternal government, and that intimate relation that should exist between pharmacal manufacturers and those who use their products is prevented by the Chinese wall our government places around the medical profession and its best interests. In the line of dental and surgical instruments the prohibition of those of foreign make is almost absolute.

Nearly a year ago I wrote to the New York house of Ash & Sons for some steel- and diamond-pointed burs, made with especial reference to inlay work; also I wanted to see and examine other of their wares advertised in the journal published by their house; but I got a reply from them saying that they did not carry the goods in stock, and would have to order from their London house. I wrote a letter deprecating this lack of enterprise, and I also wrote the parent house in London. The instruments were special instruments, made only, so far as I know, by the firm mentioned. From both houses I got very courteous replies, saying that the high duty of forty-five per cent. practically prevented their importing and keeping in stock the line of goods they wanted to. Their goods cost them practically as much to manufacture in England as they would in this country, and the forty-five per cent. duty meant prohibition.

American dentists are very practical; they know about how much instruments and materials ought to cost, but they practically know nothing of the workings of the prohibitive tariff.

European dentists, perhaps I should say American dentists in Europe, are far ahead of American dentists in America in the use of porcelain as a filling-material; it has, to a large extent, been forced on them by the great dislike of their patients to the show and glitter of gold, and now that *we* see the immense æsthetic and practical advantage the material has, we would be glad to learn from them and take advantage of every mechanical aid they have

found useful. But *no*; our government says *no*, unless we pay tribute to our already rich and prosperous dental manufacturers.

Possibly in no line of manufacture in our country have business acumen and mechanical ingenuity and ability been wedded together in the accomplishment of better results than in the making of dental and surgical instruments, appliances, and materials; in no line of work do manufacturers need protection less from foreign manufacturers; and, as a matter of fact, our makers send their goods to all parts of the world in open competition in price with those of foreign make. If our manufacturers do not need protection in foreign countries against the foreign maker with his so-called "pauper labor," why should he need protection in his own market? Why can he not sell as cheaply to us as he does to them?

We are proud of the beautiful goods our manufacturers turn out, and they are so good that they need no protection; we would buy but little less from them if the tariff were removed, but that "little less," those new and occasionally very good ideas that have so far found no counterpart in our country, we ought to be able to get as soon as they appear in the market, and we ought to be able to get them, as men engaged in the healing of the nation, without paying unnecessary tax to the already over-liberal revenues of our government.

The tariff on dental and surgical goods is not protective in any sense. We ought not to have to pay any tariff even if it were protective, but, as a matter of fact, it is only an unnecessary act of prohibition against the whole of the healing art, and such tariff should have no place in our legislative enactment.

I am told that Polk's lists of dentists are the most reliable of any we have, and according to him there are about twenty-five thousand dental practitioners in this country, and, of course, there are still more thousands of physicians in general and special practice (at least a hundred and fifty thousand).

Now, in our own specialty does it not seem hard that twenty-five thousand dentists should be hampered in their practice, should be prohibited from free access to the markets of the world, solely to protect (so they call it) the infant industry of a few very small firms and one large corporation? (The latter the first in the world established on a large scale.) Have medical and dental practitioners any rights under the government in this matter? It would seem not.

In my prefatory words I spoke of the high honor paid the medical profession in all its branches by the governments of other countries, and it has been an unpleasant duty to point out as well that our government has had for us only oppressive taxes. I can but feel that this tariff question, in so far as it affects scientific men, especially the medical profession, is but little understood, and that it needs only that light shall be thrown on it and properly brought before the country for remedial legislation to follow.

It is in this connection that I present to you and the profession the facts embodied in the sheets that have been distributed among you. These statistics of the tariff duties of most of the countries of the world represent an immense deal of labor, and are thought to be entirely reliable. Some countries have a specific duty in dental goods, other countries have an *ad valorem* duty, and still others both specific and *ad valorem*. But for the sake of comparison, and that the matter may be entirely lucid, the rates have all been put on an *ad valorem* basis and reduced to our own currency.

As the popular phrase goes, it is now "*up to you*" for action.

During most of the career of our late martyred President the "Protection of American Industries" was a phrase which to him represented almost a fetish to be worshipped, yet, in the fulness of the years of his executive duties and with the responsibility of the well-being of all the people of this country pressing on him, he uttered these words of extreme wisdom and great statesmanship, in his Buffalo address, that endeared him in a peculiar way and preeminently with all the people of our land.

"We must not repose in tranquil security that we can forever sell everything and buy little or nothing. . . . Reciprocity is the natural outgrowth of our wonderful industrial development. . . . The period of exclusiveness is past, the expansion of our trade and commerce is the pressing problem. . . . Reciprocity treaties are in harmony with the spirit of the times; measures of retaliation are not."

And then! With these and other words of wisdom and love for all his people fresh from his lips, the assassin kills him. Surely he who runs may read the lesson of these good words and that untimely end.

A former ambassador of the court of St. James has eloquently said, "I believe the only doctrine for a man or a nation is to do a friend the utmost benefit and an opponent no more harm than

necessary. I cannot believe in the advancement of any country founded on the misfortune or injury of another."

Do you notice how beautifully these words fit in with the golden rule of reciprocity as it is found in the Buffalo address of President McKinley? And do you not see how superlatively appropriate it would be for our legislators now to allow the representatives of the healing art in this country to import, freely and without duty, everything from foreign countries necessary to their progress and their best interests, thereby reciprocating that which practically every nation of the world allows to us?

THE COLLEGE COURSE AND PROFESSIONAL TRAINING.¹

BY S. M. MACVANE, PH.D., BOSTON, MASS.²

DR. POND AND GENTLEMEN OF THE DENTAL ACADEMY,—I can say, sincerely, it is a great pleasure to sit for a while between dentists, and get one of your number in the chair at last, while I do the operating. If anything I say shall prove distasteful to any or all of you, I shall have, remembering the past, certain grounds for satisfaction.

I wish to speak a little this evening about a subject that has interested another set of us very much, and I assume interests you also, and that is, some points in the relations between professional and liberal education, as we are wont to call it. I do not know whether you call college education distinctly liberal education or not. If you do not, please excuse my using the word. I suppose all education is liberal in a way, but there are degrees of liberality and degrees of professionalism.

The question of professional education, I may say at once, is a new one in the world, new in America, and new everywhere. It has brought some very troublesome questions between what are

¹ Read before the thirty-fourth annual meeting and banquet of the American Academy of Dental Science, Boston, November 13, 1901.

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called the colleges and what are called the professional schools. There is a form of it that is particularly American. Other countries have no colleges such as we have. No other country attempts to keep a grade between what we call secondary schools and the university. We got our colleges in a perfectly natural way, and have been developing them, building on them, and strengthening them all around, until they have become very important parts of our civilization.

Now, I say professional education is new. You all know, I suppose, that in your own profession fifty years back there was hardly any provision for the education of men for the dental profession. I believe the first dental college in the world was the one established in Baltimore in 1839. And law schools are comparatively recent. Of course, theological schools are not. But the professions of law, of medicine, and of dentistry are certainly modern professions, and the provisions for training men in them is quite recent. For the most part, in this country provision for professional training came later than the Civil War.

Now, it so happens that the period since the Civil War has also been a period of the development of the colleges. The colleges are some of them quite old, of course. Harvard boasts its age, and so does Yale; but there has been more change, in Harvard at all events, since the Civil War than in the two centuries and a half before. That is, there was formerly a stereotyped, old-fashioned college training, prescribed courses, carried on in a certain way; once in a while they would add something, and once in a while change something, but the general characteristics remained the same. But in the last half-century the world has waked up, and the colleges have waked up also. The fact has become recognized that science is an advancing thing, and life is a very multifarious thing, and every educated man ought to know well about some phase or feature of ourselves or our surroundings. We think we have learned that you cannot get everybody to learn a little dab of everything, without preventing everybody from learning anything very well. You have got to choose somewhere: the question is, How far will you let one choose? If I may speak of Harvard more than once, I will say that Harvard has taken the risk of going the whole length, and saying to young men that they may choose their studies for themselves; taking care, of course, not to offer anything that is not a reasonably good study. We think

Harvard is not offering some poor and some good studies, but all good. We place them all on equal terms. The result has been that we think we are getting much better work done than was ever done before, much more real studying done. We are training men to study; not to get up a lesson for somebody overnight, and recite it the next morning, but to go to work on a study, and use books and teachers as instruments.

Then, of course, on the scientific side there has been an enormous development. Colleges provide not only the scientific departments, but all the colleges are now run on a scientific basis. Taking my own department of history, there is no comparison between the way our work is done by our more advanced students in history now in Harvard and the way it was done fifty years ago. Now, any set of men who expect to master history at all must develop a spirit of going to the sources of history and working for themselves, must learn to like that kind of work and pursue it because they love it. We think that is the way to train men.

Of course, in the scientific departments, strictly, as you know better than I do, there has been an enormous development of the the spirit of research. The same thing we try to develop in history is developed in science. A great outfit of teachers and apparatus is required for this, and the colleges are undertaking to provide these, to keep up the lights of learning, and to promote original research for its own value; not because it may help anybody in business, but because it will help everybody to learn something about the world we live in. Those things we think are good in themselves.

I will say I think no college has found four years too long a time to spend in training young men. In this new spirit, and with these new educational outlooks and methods, four years are a very short time to spend. Now, while the colleges have been waking up to do better work, and therefore are inclined to ask for more time, and not less time, from the young men, the professional schools have waked up too. Professional spirit has waked up to the fact that professional work too may be carried on in a new spirit. Theology to-day is a very different sort of study from what it was fifty years ago. Law has enormously changed. You do not any more go to a law school to hear a course or two of lectures, and then pass an examination, and go into practice. Students now in all the reputable law schools have to make a long, arduous

course of study of the raw material, the cases. Instead of manufactured text-books, they go to the opinions of the judges, where they have to go eventually in any event if they are ever going to be real lawyers.

Then in your scientific departments, you know better than I do what is going on with microscopes and all that, and how much time it takes. When you bring your student face to face with the human frame, and the evidences and causes of disease, you have a long task on your hands. We in the liberal sciences think we have made discoveries and we have something to give to young people that is worth detaining them for; and you professional men think that your professional training now requires to be long, and we had better let them come early to you. That is the origin, I suppose, of the demand for what is called the three years' course, and that is what I want to talk to you about particularly; and if, in doing so, I seem to show my teeth as a college man, please excuse me; you will understand it.

I am not one of those who believe that the college course ought to be reduced to three years. I will be frank with you at the outset, and if you do not like what I say, you will pardon me, at all events. It has been my settled opinion that the American public as a whole, the college-patronizing public, has not shown, thus far, any strong desire, any general desire, for the reduction of the college course to three years. The demand for it, so far as I have seen, has come from some of the professional schools, or from men who tell you on abstract principles that it is unsuitable to give four years for a liberal training, between the preparatory schools on one side and the professional schools on the other.

It is my opinion that the American public, the better part of it, want the best thing that they can get. They do not want a second-rate article in this country. One finds evidences of that in places where you very little expect it. In riding on our railroads one sees it: we have not our first, second, and third class in America. If you put on first, second, and third classes, I do not know which class our people would use, but I feel sure they would mostly ride in the same class. You will not find ordinary people voluntarily submitting to a poorer article, at least in public, than they know their richer neighbors are getting. There is a great deal of pride of equality, democratic equality, in America, which is at bottom a good thing. Anyway, it is there, and the form it takes

in this matter of education, it seems to me, is that your ordinary intelligent American, sending his boy to college, and embarking him on a professional or other training, wants to get the best he can afford; and we have a very large class, larger than any other country, who can afford the best there is. I see evidences of that in relation to the colleges, in the fact that the colleges that have made the largest demands in the way of entrance requirements, and have a four years' course, have grown more rapidly than those that have offered easy terms of admission or a shorter course to get through.

Let me give just one example, Johns Hopkins University; you have all heard of it, and the world has heard of it. It is a very notable institution. Johns Hopkins University has offered always a three years' course for the A.B. degree; and it is a well-known fact that its entrance requirements are no higher than those of Harvard or Yale. But the Johns Hopkins undergraduate department does not grow. It has only about one hundred and thirty candidates all told. Harvard sometimes grows that much in one year. There was a time when we were more particular about a four years' course at Harvard than, I am sorry to say, we are now. I have never yet known a college that had a four years' course cutting it frankly down to three, but I have known of a three years' course frankly raised to four; which does not look as if there was a large public demand for a three years' course: it points the other way. However, it may be assumed that there are individual parents who think it would be better if all young men went through a three-year college course only; they would be willing to have their sons do that if others did it. But they do not choose a three-year college, though the choice is quite open to them.

On the other hand, while it is the fashion to have a four years' course, there have been some changes made in American colleges with a view to meet the case of men who cannot afford, or are supposed not to be able to afford, first, the long preliminary training required to get into a high-grade college, and then the four years' course. Unfortunately, a large proportion of our colleges have entrance requirements that look well on paper, but they admit without examining on these, taking certificates from teachers, etc., as evidence that men have gone over the ground. Then there are others that have a high-sounding set of requirements, with examinations, but do not insist on a very substantial performance.

We all admit with some deficiencies, but all colleges should have real examinations and insist that before passing candidates shall show some real knowledge.

Then, some of these same colleges have tried experiments in multiplying degrees. There is the degree of Bachelor of Letters, and the degree of Bachelor of Philosophy, invented as cheap substitutes, I should say, for the A.B. degree. The colleges that have those have the Bachelor of Arts degree besides, and require a four years' course for that, and also, nominally, require a pretty high admission outfit, and then have these side-shows of Bachelor of Philosophy and Bachelor of Letters. Those degrees do, it must be said, attract a considerable proportion of the students in the colleges that have them. They are probably meeting a need of some sort among the patrons of those institutions, but the larger universities, Harvard and Yale at all events, do not offer any such degrees at all; and they have apparently clearly resolved that, whatever solution of the education question they shall take, it shall not be that solution of introducing cheap substitutes for the Bachelor of Arts degree, but something done for the arts degree itself.

Some have a simple solution, and that is simply to cut off one year from the arts course, make it three frankly, and be done. Now, that remedy goes hard with the college faculty men, even with those who think it the least objectionable method. They have been working for half a century, nearly, improving the standards and the methods of the colleges, and were getting the colleges to a position where they were doing, we thought, really good work; at all events, had begun to do really good work. And now comes a proposition to spoil it all, or spoil the best part of it, by striking out the last year. The last year of a student's years in college has always been the best year, of course. Young men do not get the proper degree of maturity for real university work until they get to be twenty-one years of age, or so. I feel that young men, without much additional effort, accomplish vastly more in the senior year than in any other year of the course. They are prepared to do better work. The proposition now comes to strike off the senior year, and let all that go. College professors would be more than human, I think, if they did not feel sorry to have that happen: even those who are willing to cut it off, in supposed answer to public demand, will tell you they are sorry,—sorry they could not leave a good thing alone.

There is another plan which is in use at Harvard for meeting this difficulty, and apparently suits many of the advocates of the reduction, and that is to throw the elements of the four years' course into hodge-podge, abolishing your notions of freshman, sophomore, junior, and senior, each with its prescribed number of courses, and letting the students take the whole dose in three instalments instead of four, doing extra work enough each year to make it count for the fourth year. I do not myself think that method is satisfactory, on the whole. Some of those who favor the reduction in this form, who are voting for it and supporting it, do not like it; and I will tell you one reason, and a strong reason, why. Most of us are pretty clear that the so-called *extra* work is not really extra, in many cases: it would not be well if it were. The best students in Harvard, since I have known it at all events, did enough work already. The fact was that many of them did too much for their own good later: they spent life force in study that ought to have been kept in reserve or used in recreation of some sort. Those men are not really doing extra work; they are merely distributing their work in a different way. They are getting less out of each course than they used to do when they did only four courses a year instead of the five or six they do now. But they get through, and if they pass with sufficiently high grades, they are entitled to the degree at the end of three years. If they pass with but low grades, the faculty has consented to count the work done eventually, not giving the degree at the end of the three years, but giving it to them with their class, allowing them to be absent from the college during the fourth year. That is not an ideal arrangement, and it gives rise to some very embarrassing subordinate questions. Under that arrangement some forty of our students are now in the professional schools, who are excused from the senior year in college, because they already have passed enough courses to make up the stint for the degree.

Those of us who do not think the three years' course really called for are rather unhappy about that, because we think it is a sort of double injury, shortening the course, and spoiling the course; spoiling the chance to get the best work out of the men who have always been our scholars. An ordinary man cannot do scholarly work under these circumstances; it is simply out of the question. Of course, he is helped somewhat by the fact that in the choice of studies he can choose those which co-operate together.

Several courses in history, for instance, may help each other, and so relieve him somewhat; but every course has an independent line of work, after all, if it is well done; and if it is done as it ought to be, it takes time. And those of us who do not like these things are not happy. I confess that I am myself not easy about that phase of our college situation, but I am waiting to see how it works out.

The Board of Overseers (I do not know whether this is telling tales out of school) asked us about two years ago to put into the catalogue a clear and simple statement of the conditions on which men can get the degree of Bachelor of Arts. The faculty took that up and worked over it, and they appointed a committee on it, and the committee reported on it; the faculty worked over that report, and did not much like it. Then various substitutes were offered, and we labored over them, and spent two years over the matter. Only at the last meeting but one we finally adopted something, by a very small majority, as a statement of the ways in which men may get the Bachelor of Arts degree. One difficulty was the question whether it is still a fact with us that ordinarily four years are required,—that there is a sort of presumption in favor of four years, and that the three years' course is more or less experimental. Of course, one set of men wished to put the three years' degree on the same terms as the four; and another set wished to stand for a four years' requirement as the ordinary course, and the three years' course as an exception.

That question of policy meets us at every turn, in our discussion of our college government and courses of study, and all that: we run up against that three years' question every time. The faculty is very much divided about it, and probably Harvard will have to do some drifting as regards that question, and wait for further light.

Meanwhile, you professional men, I suppose, would be, on the whole, inclined to the proposition that professional education is the first thing to be considered; that what we call liberal education must take its chances, or must more or less take its chances, and that the college ought to be satisfied with three years. Perhaps I am doing you uncalled-for service in assuming that, but I have found that that is, on the whole, apt to be the professional state of mind. I judge your chairman, perhaps, would not go so far as that, from some things he dropped in the course of his

excellent speech; but I know that a good many professional men do take that position, and take it strongly.

Has it occurred to you that there is a possible danger of overdoing professional school work? I am not asking that you go back to the old days when the barber or the blacksmith was the dentist, and when the apothecary was the physician. Those things have had their day. Remember that only in recent times has the world begun to insist upon strictly professional training to any large extent as a university function. Looking at the evidence of the centuries behind us, we can see that liberal training is by the verdict of time the most important thing. The world had that, and valued it, and clung to it, long before it had the dental colleges or medical schools to any extent. Is it not evidently of more importance to have well-trained men, citizens with trained minds, than to have the younger members of the professions very highly trained at the very moment of their entrance into the profession? Is not your young dentist bound, in any case, to be more or less of a journeyman for some years? Is not the young lawyer bound to be young intellectually? In other words, has he not still to go through a large amount of professional education, professional training, before he shall be a really accomplished doctor of dental medicine, or a really able lawyer? I am sure that it is possible, easily possible, to overrate the importance of keeping a young man a large number of years in the school stage of his profession. A law graduate cannot know all the law; even if the law course be made four years, he is not going to know all the law and be an oracle the moment he opens his office. He will have to take hold of his case, when he gets one, and look up the cases bearing on it; and the best the law school can give him is the ability and the power to get hold of the previous cases of the same general sort, and discretion to select those that bear on his point. If he has that ability trained into him by his course in the law, I think he has got the best thing the law school can give him. It is impossible to fortify him with enough of the law at every point for each case as it comes. It is a question whether two years of training in methods of study of law would not be enough. If a young lawyer were to spend the next two years butting against practice, doing what he could with it, helping and observing older lawyers, and getting the general bearings of his profession, it is a question if that would not be better than spending a third or a fourth year in the law school.

I imagine that other professions are very much in the same case; that it is possible to overrate the value of the third year or the fourth year in university methods of study of the elements of the profession. Of course, now, I speak with diffidence about that, whether I seem to or not. I am aware that in the study of medicine, and probably in your own profession, the new discussions, the new scientific treatment of medical pathology, or whatever you call it, may alter the case. There you need laboratories, I suppose, a very expensive outfit which the individual practitioner could not provide himself with. It may be different in your case. A lawyer, I feel sure, is on a somewhat different basis.

I said some of the colleges are trying to compress four years' work into three years' time, in order to accommodate themselves to a supposed demand for a shortening of the college course. There are other ways in which much has been done that ought to appease this alleged demand. One way is that of offering elective courses that contribute very helpfully towards the study of the professions later, enabling the student who takes these courses to shorten, or make more effective, his professional course. Doctors, for instance, I suppose might use courses in chemistry and biology and kindred work in Harvard, so as to shorten their medical course, or, at all events, to make it more valuable to them, immensely more valuable, I should think. The elective system, besides its other merits, is a very real contribution to professional education.

There is a third way that is tried by some colleges, notably by Columbia University,—the principle of letting candidates for the Bachelor of Arts degree take their fourth year in a professional school, and have that year count towards their Bachelor of Arts degree. Columbia seniors go off into law, or medicine, or any other of the professional schools, and receive, at the end of the year, their Bachelor of Arts degree. That has been discussed frequently at Harvard as a practical solution of the question, but never has found favor with a majority of the faculty. There are various reasons why: one is that the Harvard faculty of arts and sciences would not like to seem to coddle our own professional schools in that way. If a senior might go off to the Harvard Medical School and take his year there, we should have to say that he might also go to Columbia or to Yale. We have a new spirit of courtesy towards the universities that would make it impossible for Harvard,

I think, now to say, "We would let you stay a year in our own medical school, and count it towards your degree, but if you want to go to Yale or Columbia, we cannot count work done there." That would not be at all in keeping with our practice. If we set out to let our students go to any professional school to make the senior year, you can imagine what a set of administrative questions there would be about that at the end of the year. The difficulties we should have in administering the plan would be endless.

We run up against the wall in this question at a great many points in every solution of it that has been suggested, except the frank one of cutting off a year. I am free to say that, so far as I am concerned,—and I think I represent a good many of the other opponents of the three years' course,—I would rather cut off the fourth year altogether, simply let it go, than attempt to work substitutes and contrivances about it, keeping up a pretence of having it when we had ceased to have it. I think that would be the best solution in the long run,—I mean the least objectionable.

But it remains to be seen whether the country wants that or not. All the evidences, so far as I have seen them, point the other way. This country wants a good thing: they want good university training. They do not forget, and do not want us to forget, that not all the students go to professional schools. Are we going to cut down the four years' course to three for all the students, because some of them study medicine later, or law, and so on? Or shall we say to everybody, This country has had a four years' course in its colleges, has shown its ability to support that, has shown a pride in it, and a desire to strengthen it by showering new resources on the colleges all around; and shall we not keep this highly prized national possession intact?

The reasons given for cutting down to three years would all be quite as rational and in place by and by to cut down to two. There really would be no limit, once you begin cutting away the college work. The secondary schools are growing, and quite a large proportion of them would be able to put their students into the sophomore year without exertion, and they may eventually absorb the freshman year. And if we lose the freshman year to the preparatory schools, and lose the senior year to the professional schools, where is the college going to stand? It comes back to what I have said about other countries that have had highly developed second-

ary schools. They send men from their Latin schools to the professional and university schools: there is no college there. Do we want colleges in America as a part of our outfit, or do we not? That is the real question. Is there room for the college in the American education? Probably we all think there is. But if we really think that, we must try to accommodate other things to what is necessary to the real life of the colleges.

It may be that colleges here could be kept up for a long time on the three years' basis. They could undoubtedly do good work, if not the best work. A young man who gets a three years' degree now, with the improved fitting-school training, is certainly as good a scholar as his grandfather was who took the four years' course. But are we always to be satisfied with what our grandfathers had? We certainly are not so easily satisfied in other things. You are not so minded in the professional line. And is the college to be the only institution that must go back? You will hardly expect a college man to answer "yes."

The practical question is, it seems to me, Is the wealth of America enough to provide a better education than any other country has? I think it is. I think America is willing to do it. And the people who are trying to convince our young men that four years are too many to spend in college work are really doing us a doubtful service. The reduced college course they advocate would doubtless be still a good thing; but it would not be the best thing of which we are capable. When the colleges that set the highest standard for the A.B. degree begin to be abandoned in favor of those that make the least amends, the time will have come for lowering the requirements. But that time gives, as yet, no sign of its approach.

There is one other point that I wish to suggest. In looking over a book this afternoon on professional education, a book issued by the University of New York, I was surprised to discover how few professional schools in this country have admission requirements that amount to anything. There are but two law schools that require for admission any sort of degree, or, indeed, any appreciable college work. Of your own dental schools (there are fifty-six in this country) three have no express admission requirements; eighteen have purely grammar school subjects for entrance; another eighteen seem to require about a first year in the high school course, just the beginnings of French and Latin;

eleven others have requirements that would be covered by about two years of the ordinary high school courses; and six of the best may be fairly said to require about a three years' high school course. None of them requires as much as would be required for admission to any college.

As for medical schools, there are, according to the same authority, only two (Harvard and Johns Hopkins) that even pretend to require a degree for entrance. Twenty-nine out of one hundred and fifty-six medical schools simply require grammar school subjects. The rest demand varying quantities of high school work. As a class they make demands for admission far below the admission requirements of the colleges.

The theological schools are above the other professional schools in the way of requirements. More than half of them require some college training,—in most cases the full college course.

What sticks in the crop of some college professors is that the professional schools, without requiring a degree at all, or, indeed, anything that counts for a degree, should undertake to tell the colleges, You ought to lower your degree, so that *your* men may come to us earlier. Why cannot the professional schools, if they are not prepared to demand a degree, demand at least some part of the work that goes towards a degree? Why not put the requirement up to include the work of the junior year, as the Harvard Law School did for a while, or even the work of the sophomore year? Men could be admitted to the professional school on the basis of college record up to any specified point in the course quite as easily as they can be admitted on the strength of a degree. And any step in this direction would throw the influence of the professional school in favor of some degree of liberal education, an influence that has hitherto been lamentably lacking.

Reviews of Dental Literature.

THE DISINFECTION OF DENTAL INSTRUMENTS BY SPIRITS OF SOAP. By W. D. Miller, Berlin.¹

Professor Miller refers to his previously published work upon various so-called antiseptics, and their value in the sterilization of dental and surgical instruments. From these investigations his conclusion was that the use of a five per cent. solution of lysol was the best chemical means for the sterilization of hands and instruments. Later other means for accomplishing this purpose have come into notice. Among these are formalin and spirit of soap. Spirit of soap has been especially recommended for the sterilization of the hands.

Inasmuch as lysol possessed a disagreeable odor, Professor Miller was interested to determine whether the spirit of soap possessed equal sterilization power to that of lysol. His experiments show that spirit of soap has far less sterilizing power than lysol, and his conclusion is that it is valuable in the treatment of the hands, but that five per cent. lysol solution is best for instruments. In the use of lysol, such instruments as are fairly smooth are immersed in it for at least half an hour. Burs are immersed from one to four hours.

The author states that in all cases where there are affections of the mucous membrane of an infectious nature, especially where there are indications that the patient has syphilis, we should sterilize the instruments in boiling water to which two per cent. of soda has been added to prevent rust. In a foot-note the author adds that since sending in the above communication (in the beginning of July) he has entirely gone over to the boiling process.

ACTINOMYCOSIS.—Barclay (*Bristol Medico-Chirurgical Journal*, March, 1901) has no doubt that actinomycosis is still regarded by many as rare and infrequent, in spite of the records. He thinks that because of the obscure and ill-defined symptomatology of the

¹Ueber Disinfection von zahnärztlichen Instrumenten mittelst Seifen-spiritus, von W. D. Miller, Berlin. Deutsche Monatsschrift für Zahnheilkunde, 14. Dezember, 1901.

disease, and its close resemblance in clinical features to several much commoner lesions, there is much danger of failing to recognize the condition.

Once implanted, the specific organism, which grows on cereals and grasses, spreads and sets up inflammation. Sometimes an ulcer is formed, at other times a tumor of a pale-yellowish color, globular in shape, riddled with holes of a larger or smaller size containing pus, and very vascular, although it presents a superficial resemblance to the interior of a tuberculous or gummatous deposit. It infiltrates all the tissues, spreading in the intermuscular planes, and even into the muscles, entering into the cancellous tissues of bone and the solid viscera, and sometimes forming communications between the hollow viscera. The growth may be carried by the vascular channels as emboli, and deposited in distant parts of the body.

The percentage for different regions seems to be as follows: Head and neck, fifty-five per cent.; digestive tract, nineteen per cent.; pulmonary, fourteen per cent.; skin, two per cent.; and doubtful, five per cent.

In the jaw it generally simulates the common periosteal or alveolar inflammations, or occasionally suppuration in the antrum. One swelling follows another with great inveteracy, sinuses are very obstinate, and induration or infiltration is apt to occur widely in either an upward or downward direction.

Ruhräh lays great stress on the absence of involvement of the lymphatics, which he describes as a constant feature of the disease. There is an early appearance of trismus, which may be attributed to an involvement of the muscles of mastication, although in some cases the temporomaxillary joint is affected. In a case observed by Hoover during life it was impossible to show the presence of streptothrix, but at the autopsy very wide-spread disease was found.

Oliver has described a case where the disease appeared as an ulceration of the mucous membrane of the mouth. Several sores appeared in the mouth. They were curetted and healed, leaving a white indurated patch. A purulent affection of the gums appeared coincidentally; the teeth were removed with the exception of two, to which artificial ones were clamped. An ulcer appeared opposite the clamp in the right cheek and spread rapidly. No streptothrix or tubercle bacilli were found in the scrapings. Iodide of potassium was given in large doses for two months, but the ulceration

only extended farther and became very painful. While an operation for swellings that had appeared was being considered, the submaxillary swelling softened. On excision, a thin, greenish-yellow fluid containing some yellowish-white curdy masses was discharged. The microscope failed to show the streptothrix. A radical operation was undertaken, and several weeks later a lump under the ear softened, and on being opened the same greenish fluid was evacuated, in which, after prolonged search, the streptothrix were found. The patient finally died of arterial hemorrhage, probably from the lingual artery.

Cases of this affection involving the skin are quite rare, but Leser describes two forms,—ulceration, and a discrete nodular skin inflammation, with central cicatrization and peripheral extension, as in lupus. He considers the absence of lymphatic involvement almost pathognomonic, and he says the board-like indurations and the grossly nodular conditions which are found in these cases are not usual in the other affections. The disease may also be mistaken for rodent ulcer when it occurs in the skin.

The only absolutely diagnostic feature is the discovery of sulphur granules in the discharge from sinuses or abscesses, or in the sputum or stools. Great stress has been laid by some observers on the absence of involvement of the neighboring lymphatics in all cases. Godlee says the character of the abscess, as determined by the finger, would make him almost certain of its nature,—there are indefinite spongy walls, easily breaking before the finger and bleeding very freely. Ruhräh says the back of a patient of Black's was a seat of numerous sinuses, whose puffed and reddened openings, together with the livid intervening skin, gave a perfect picture of actinomycosis; and Volkmann, Boström, and Bernhardt believe that the reddening of the skin, turning later to a violet-blue tint, shading from the centre to the periphery, is diagnostic of the disease.

The prognosis seems to depend on the possibility of a radical extirpation of the growth, and on the presence or absence of secondary infection.

Whenever possible the diseased area should be completely excised, and Ruhräh recommends that after this, where permissible, the area should be thoroughly cauterized. The administration of iodide of potassium should always be pushed at the same time, beginning with five or ten grains three times a day, and increasing

it to forty or fifty grains thrice daily. For injection into sinuses, etc., a number of substances have been employed,—tincture of iodine, carbolic acid, salicylic acid, nitrate of silver solutions, iodoform. The only hopeful treatment seems to consist in excisions, or curetting, repeated as often as necessary and as early as possible, with the internal administration of iodide of potassium up to the limit of the patient's endurance.—*Therapeutic Gazette*.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A REGULAR meeting of the Institute was held on Friday evening, November 8, 1901, at the office of Dr. C. B. Parker, 167 Remsen Street, Brooklyn, N. Y., the President, Dr. J. Morgan Howe, in the chair.

The minutes of the previous meeting were read and approved.

Owing to the length of the programme, the communications on theory and practice were omitted.

Dr. Charles F. Allan, of Newburgh, N. Y., read a paper entitled "What should be the Relation of our Government to the Dental Profession?"

(For Dr. Allan's paper, see page 149.)

The President.—Gentlemen, you have this very interesting paper of Dr. Allan's before you for discussion. I trust you will discuss the subject thoroughly and try to make your suggestions practical. We have the honor of having with us Drs. Jamison and Bristowe. We shall be very glad to hear from them.

DISCUSSION.

Dr. A. T. Bristowe.—This whole question opens up a very broad subject, the subject of protection, in which I have long been interested. As long as this is the policy of the government, how can we as physicians and dentists expect the government to make us a favored class and exempt us from the general policy of protection to which all arts and sciences pay tribute? So far as surgeons are concerned, there are very few things of which protection de-

prives us. About the only surgical instruments are the cystoscopes, and for the physicians microscopes and some few pieces of diagnostic apparatus.

Microscopes made on this side are not quite so satisfactory as those of foreign make, and all the better grades of oil-immersion lenses are made on the other side. It is no doubt a disadvantage and an injury to us to have to pay duty on these things, but at present I fail to see how any practical suggestion can be made whereby we can escape the payment of this duty. When we think of the trusts that protection has nourished, I confess the question is a difficult one. Take the steel trust. Steel is being sold across the water cheaper than in this country on account of protection. Do you suppose the steel trust is going to let anybody deprive it of its special advantage and influence? Not so long as there is any money to influence legislation. Take the pharmacists' trust. They represent a large amount of capital, and they will never voluntarily permit any change in the tariff which will affect them. It is a matter of fact that in the Committee of Ways and Means at Washington it is largely a scramble to see who shall get the biggest protection. It is purely a question of legislation, and that is a question of money and influence.

How are you going to attack the tariff? You will find that if any change is attempted, even in so small a matter as dental instruments, those to whom protection gives special privileges will fight any change as long as they can. If I were asked to make any practical suggestion in the matter, the only one I could offer would be "patience." I say this because some of the wisest statesmen are beginning to see that we cannot always live behind this Chinese wall of exclusion and yet sell our products to other nations while denying them our markets. Our late President McKinley referred to this in his last speech at Buffalo. Reciprocity is a new word in politics, but it may mark the beginning of a new era in trade methods. As our laws become more liberal, we as scientific men may expect more liberal treatment from the government, but not, I fear, until the necessity of a change in our present policy becomes evident to our legislators.

Dr. S. E. Davenport.—It seems to me that we are under obligation to Dr. Allan for pursuing this subject as thoroughly as he has, and giving us the result of his research and thought. The gentleman who last spoke is certainly most convincing, and the position

he has taken I believe to be true. Probably this unjust taxation of chemicals and supplies is only a part of a general plan, and we can hardly expect any great change in this particular direction except through a change in the policy of the administration. There is hope for us and all like sufferers in the fact that the revenue of the government is largely in excess of its necessary expenditures, and the constant reader of the news of the day finds many suggestions from prominent men all through the country regarding the advisability of reducing the duties on a great many articles. I am very sure that Congress might be induced to make a considerable difference in favor of the things used by members of the great healing art. There are, in my mind, a few possibilities in this matter which may be worth following out. Certainly this paper ought to have a wide publication, and we should use our influence to bring the matter to the attention of those gentlemen who have influence with the Committee on Ways and Means at Washington. I shall hope that the Board of Directors of this society will take such action in this matter that other societies of dentists and if possible the larger medical societies will be enlisted in this movement.

The President.—It has been truly said that we suffer in common with others, and the tariff tax on our goods is only a sample of similar taxes on instruments of investigation, such as the microscope, and all kinds of instruments and books. We are under much obligation to Dr. Allan for having put the matter in such a clear and forcible shape, and I think the dissemination of these facts will do good in fostering a sentiment that will not continue to acquiesce in the policy that puts a tax on scientific progress, the advancement of knowledge, and the progress of the art of relieving suffering and the curing of disease.

Dr. C. F. Allan.—I was very much impressed with the remarks of the first speaker: they were certainly reasonable, and the argument was of great strength. My hope, as I thought I put it in my paper, lies along two lines: one being that scientific men, particularly those of the medical profession, are on a different plane and stand in a different light before the public than manufacturers, and should not be included with them in any argument.

I can readily understand the force of the position taken,—i.e., that the manufacturers would hardly submit to any break in the line of protection, fearing that, the break once made, their interests

would be the more likely to be put in jeopardy; but, assuming, as we have the right to assume, that as members of the healing art we should be considered as a class by ourselves, with separate and paramount interests, as I tried to make clear in my paper, I can but feel that much could be accomplished if the matter were presented before the proper committees of Congress in a clear manner and with the might of the whole medical fraternity behind it. In the line of dentistry my other hope comes from the fact that the tariff on dental goods does not protect and does not prohibit. It neither helps the manufacturer nor gives revenue to the government, and being so easily assailed is a great support to our stronger position that we should be relieved from the onerous tax because of its inherent injustice.

Dr. Charles O. Kimball.—I, too, wish to thank our essayist for the presentation of these facts to us. It seems to me that in view of any wrong of this kind,—and I do not wish to be considered as speaking as a free-trader or against the tariff as a whole—“that is another story”—since we represent the healing art in one of its departments, and as, under other governments, and even under our own government, such men have received some consideration,—this seems to be wrong. The only chance for our obtaining relief is along two lines. First, the line of information. The publication of this paper and this list of duties will set men to thinking who have not thought before except as a matter of course, so that perhaps we may be able to achieve some change in time. I think it will be a work, no doubt, of patience and long waiting. The other line is that of agitation. These two lines are the lines for the removal and obliteration of any wrong,—information and quiet, steady, and persistent agitation; and for that reason, Mr. President, we have to thank Dr. Allan for bringing this subject so clearly before us this evening.

On motion of Dr. George S. Allan, it was ordered that the printed tables of tariff rates of the different countries be mailed to the editors of the different dental journals of the United States and Canada.

The President.—We will now pass to a consideration of Dr. Garrett Newkirk's paper on “Preventive Dentistry.” We hope that all here present have read the paper to which attention was called in the notices. It is now before you for discussion.

(For Dr. Newkirk's paper, see *Dental Digest*, pages 743-749.)

DISCUSSION.

Dr. S. E. Davenport.—I have received the following communication from Dr. Lord:

I am sorry indeed that I cannot hear the discussions on the paper, the subject being one of the most important that ever comes before our society. I consider that the subject is well treated by the author of the paper, and it is to be hoped that very much more interest will be taken in it and attention paid to it in the near future than has been in the past.

Dr. Newkirk has expressed himself very simply and yet clearly. His theories are for the most part quite correct in my judgment, and his points well taken and practicable, and he has covered the ground so thoroughly that I feel that I can add but little that will be of interest or edifying.

Of course, as I understand the matter, preventive treatment of the teeth is almost entirely mechanical, and, as is suggested, in order to be successful should and must commence at a very early age, as soon as the deciduous teeth are erupted, and it is also suggested, and there can be no question as to the correctness of the view, that cleanliness is the real true foundation or remedy for prevention. It would seem to be very easy to apply it, but it is not done, and the question arises, Are not the dentists more at fault than their patients?

It is most probable that we have neglected our part of the work. The people, young and old, parents and those who have the care of young children, all must be taught how to clean the teeth and how to keep them clean, the surfaces that are in contact even more than the surfaces exposed to the natural friction occasioned by the use of the teeth. The reason is obvious. All this must be explained from time to time when it is observed that there is more or less neglect or misunderstanding. Then the means to be used must be furnished, and the patients instructed how to use them. We hear patients say that they do not understand how their teeth can decay, as they brush them so thoroughly. I have thought sometimes that if tooth-brushes had never been manufactured, other and more effective means would be resorted to for keeping the teeth clean and so preventing decay. I am a firm believer in the toothpick, particularly for the benefit of the gums. It cannot be passed between the teeth,—that is, between the whole length of the teeth,—but it can be passed between the teeth at the gum point, and so prevent

the gum from becoming swollen and filling up the natural space. We often have patients come to us with the point of the gum between the teeth so congested and swollen that it is quite impossible to keep the teeth clean or use the floss-silk without much distress. If we find this condition of things, the first thing to be done is with a suitable instrument to remove the point of gum, and then we can show the natural space and speak of the importance of keeping that space free.

A suitably shaped wooden toothpick is probably one of the best, if not the best, means to use to keep the natural space between the teeth at the gum, and this will greatly aid in keeping the teeth clean at that point.

I have found great usefulness in passing an instrument between all the teeth where it is possible, and with a suitable instrument this can be done in nearly every case. The instrument should be nearly as wide as the length of the short teeth, in order to give proper strength, and the temper of the steel must be just suitable, or it will be a failure. This little operation is often very useful to the gums where there is congestion and to enable the silk to be passed more easily.

It is self-evident that the proper preventive means and appliances cannot and will not be used to advantage unless there should be a proper knowledge of what the result will be, and great interest felt in the result, all of which does not yet prevail, at least to any extent.

It is a good suggestion in the paper that the relation of the physician and the dentist should be such that they would act in concert in the use of preventive means, and this would awaken, or be likely to, a desire on the part of physicians to know more about the teeth than they now do, in many respects. There can be no question but that the dentist should be well informed in regard to diseases generally and their treatment.

Dr. E. H. Babcock.—I have read the paper through, and am very much interested in it. It seems to me that at the present time dentistry has accomplished about all it can by means of fillings. In order to preserve teeth we must resort to other means. There have been various ideas presented within the last few years. Dr. Black presented the idea of the extension of fillings which to my mind is chiefly correct. His idea is to bring the margin of the filling to a point where the food cannot collect or where it can be

easily removed with the brush. Dr. Newkirk claims that a clean tooth never decays. If the teeth are thoroughly cleansed, not only by the patient but by the operator, at frequent intervals, their condition will be much improved. I do not quite agree with Dr. Black as to the extent to which he would carry his preparation of the enamel margins. I had a little girl brought into my office early this week. After examining her teeth I turned to the mother and said, "I believe you need a good scolding." The child was eight years old, and her teeth had been badly neglected. The mother said that she did not know a child needed to be brought to a dentist before the eighth year. I cleaned up the teeth and called attention to the sixth-year molars, which were so badly broken down that they needed to be extracted. To cite another case: about three years ago, just as I was leaving my office, a gentleman called with such a bad condition of the gums that they bled at the slightest touch. After working over him for two hours and removing a large amount of salivary calculus, I got the gums in a healthy condition.

Regarding the relations of the dentist to the general practitioner, my experience has been that the physician is very apt to look into the condition of the teeth of his patients, understanding that without sound teeth for mastication there cannot be good digestion.

Dr. E. A. Bogue.—Before speaking on the subject I would like to remind the last speaker that he is uttering a heresy when he talks of extracting the sixth-year molars in a little girl eleven or twelve years of age. He evidently is not aware that it is impossible to properly masticate the food after these teeth have been lost. I trust he will revise his remarks, leaving out this heretical doctrine.

I was greatly pleased to see Dr. Newkirk's paper. He seems to have carefully considered the views of Drs. Black, Williams, and Hopkins, gentlemen who have all taken a broader view than the field of practice which lies before them. It has been said, and perhaps truly, that reparative dentistry has gone as far as it can, as such, in the preservation of the teeth, but it must go farther than merely preserving the teeth that are brought to the dental specialist, and the general practitioner is going to aid us enormously in that work. I do not think we have learned more than the first faint glimmering of the truth as yet. One writer has gone so far as to claim that two persons contemplating marriage should be properly mated so far as the teeth are concerned. We as dentists seldom

see a set of thoroughly good teeth. I have occasion to know that a great many of our profession are not aware that there is such a thing as a set of teeth so perfect that they will last through three score years and ten without the dentist's care. Yet such teeth exist. I have had occasion several times to allude to one gentleman that I have met who was fifty-two years of age, who never had had a brush in his mouth, and yet his mouth was perfectly clean and void of tartar. I have had patients come into my hands whose deciduous teeth were riddled with holes before they came through the gums, and one whose permanent teeth had from five to ten cavities in each of them. Now, at twenty-four years of age, she has never lost a tooth and has never had a toothache. But this is all mechanical repair. What can be done with such a child, between the hour of birth and the twelfth year of age, to get the enamel-organs in such a condition that they will perform their function properly? It seems to me that in one way our duty is clear,—that we should teach the mother of every child that comes into our hands how to keep that child's teeth clean so as to prevent decay, and if possible see that the physician keeps the child in such a condition that the fluids of the mouth shall not be productive of decay. It has been claimed by Dr. Michaels that the saliva is often in such a condition as to favor decay, and I think, not infrequently, we see children from eight to sixteen whose mouths are never in a healthy condition, because of improper food, improper mastication, and a failure to remove the débris of food, which, remaining, harbors the bacteria of decay. I do not know, Mr. President, if it is proper to make these rather crude remarks, as they have no especial bearing on Dr. Newkirk's paper.

Dr. Babcock.—I think Dr. Bogue would not have taken me to task regarding the suggested extraction of the sixth-year molars in the little girl of eight if he could have seen their condition. They were so extremely decayed that it seemed impossible to save them, and my idea was that the twelfth-year molars would come forward and take their place.

Dr. Davenport.—Dr. A. H. Brockway, our vice-president, has for years called attention to the fact that many valuable papers are read before dental societies and dismissed with but little discussion, either from lack of time or because the hearers were not prepared to discuss them, through failure, perhaps, of the Executive Committee to distribute digests of the paper beforehand.

Dr. Brockway has often suggested that our Executive Committee would do well for the Institute by selecting for discussion before this body valuable papers read before other societies, instead of giving their thought and effort to the securing of entirely new matter.

The paper entitled "Preventive Dentistry," read before the Illinois Dental Society last May by our member, Dr. Garrett Newkirk, of Los Angeles, Cal., and published in the October *Dental Digest*, seems to me to belong to this class of papers, much too valuable to be allowed to pass into dental literature without discussion.

Dr. Newkirk has shown great ability in bringing together in a concise way many practical thoughts, which if followed out in practice would result in service of the highest class to the needs of patients and, better even than that, in a prevention of a considerable proportion of their usual needs.

This whole subject of prevention, in the various lines in which it is being thought out seems to me to be *the* important subject of the time, and it behooves us all to give such attention to it as will enable us to derive all possible benefit from it, thereby doing our duty to ourselves and our patients.

It seems to me that the discussion of Dr. Newkirk's paper should be approached from two directions: first, the consideration of such plans and methods for the prevention of decay as may be taught by prophylaxis, hygiene, etc.; and second, such methods as will anticipate and make improbable more serious trouble.

No doubt we all agree with Dr. Newkirk that a clean tooth-surface will not decay, and, following that thought, our duty is not only to instruct all patients how to do the best possible cleansing for themselves, but also to see them frequently and make use of such prophylactic measures as shall prevent the retention of tartar and food between the teeth. Probably no system is as valuable for this purpose as that so ably and enthusiastically advocated by Dr. D. D. Smith, of Philadelphia. The condition of the teeth of the patients Dr. Smith so kindly exhibited to us last June was certainly a revelation, and probably no cleaner mouth was ever presented for examination before a dental society.

Whether it is necessary or desirable for patients to present themselves as frequently as Dr. Smith's are required to, every operator must decide for himself, but the value of the method is beyond all

question, and no practitioner who would do his best for his patients will dispense with its use.

Some dentists have made use of the method for preventing decay advocated by the late Dr. Hart, of San Francisco, with considerable satisfaction, erosion particularly being prevented or retarded by the thorough application of formalin, dioxygen, etc. Whatever aid we can get from these various methods of prevention is just so much gain for our patients and for ourselves.

The late Dr. Stebbins, of Shelburne Falls, Mass., was certainly a benefactor of the human race, and made for himself a very high place among dentists by reason of his suggestion and of his careful experiments with the use of silver nitrate to prevent the extension of decay in the small cavities of children's teeth, as well as on the softening surfaces of the back teeth of adults, all of which it does effectually; and were it not for the discoloration caused by its application, we would derive great benefit from its use upon sensitive and eroding teeth in the front of the mouth.

One of the recognized needs of the time is a chemical, or the combination of two or more, which will give the good results of silver nitrate without its discoloration.

Leaving now the consideration of the various methods of preventing the beginning of decay, I will pass on. I would like to say just a word on the methods which should be used to retard decay and to prevent more serious trouble when that decay exists. It gives me pleasure to call attention to the fact that Dr. E. A. Bogue has, since I have known him, earnestly advocated the filling of the smallest cavities in the permanent teeth of children. Of course, there are small cavities in the teeth of adults that it is quite proper to leave unfilled, but with the teeth of children, with their different environment, it is certainly to the advantage of these patients that the slightest be detected and filled.

Dr. Newkirk mentions that in his paper, but I am glad to have the opportunity to emphasize it a little. What Dr. Newkirk says about the radical grinding of frail walls before filling I heartily agree with. Care in this line frequently prevents serious fracture.

The President.—Dr. Newkirk's paper is very interesting in the suggestions between, as well as in the lines themselves. The filling of small cavities so as to prevent them from becoming larger is a very desirable preventive measure. The examination of teeth I am

sure all of you gentlemen have observed is frequently not thorough and careful enough to discover cavities that should have their progress arrested. The mechanical cleansing of the surfaces of the teeth, we all must agree, is the best of prophylactic measures against decay, and in the reference to chemical treatment of superficial decay you will probably observe that Dr. Newkirk means the use of nitrate of silver, as it is yet the only agent we can rely upon for arresting decay by chemical action. All of these measures are preventive, and they cannot be too strongly emphasized.

Dr. Kimball.—I had a suggestive case in my office to-day. A gentleman, a friend of mine, asked me if I would look at a Chinaman's teeth, a friend of his, and give him advice regarding them. Having some spare time to-day, I sent for him. His teeth were the best possible awful example I have ever seen of the result of neglect. The teeth were of good material and were strong. There was little or no decay, but the tartar had accumulated around them and they were covered with a brown serumal deposit. The teeth were loosened; some had already been lost. Pyorrhœa prevailed. The condition of his mouth was perfectly shocking.

The point in Dr. Newkirk's paper which I would wish to emphasize is that frequent and regular cleansing on the part of the dentist is a preventive, almost a total preventive, of pyorrhœa. That has been brought before us quite a number of times, but I think we may be pardoned for bringing it up again and emphasizing it. It has been my experience in a great many cases that we do not have pyorrhœa where the teeth are kept clean from childhood, so that the line of work outlined by Dr. Newkirk, the careful watching of the teeth and their cleansing by various means, such as the methods advocated by Dr. Smith and others, not only is a preventive of decay but of the much more serious disease, pyorrhœa, which causes not the loss of the individual parts of the teeth, but the loss of the tooth as a whole. I wish to emphasize with all the strength I have that one point. The cleansing of the teeth prevents pyorrhœa.

Dr. F. Milton Smith.—I have been considerably interested in reading the *résumé* and in the discussion of the paper. One or two points especially have impressed me. One was called attention to by our president,—the importance of finding minute cavities in children's teeth and the prevailing habit with many dentists of overlooking these small places. I understand that Dr. Davenport,

who is almost always right, says Dr. Bogue finds all these little cavities and fills them for children. I am glad that Dr. Bogue stands by Dr. Davenport, even if he is wrong. I confess, with all due respect to these experienced men, that I do not always fill them, even if I do find them. I would like to ask Dr. Bogue if he would fill cavities in the teeth of a little boy eight years of age, whose upper incisors are not quite half-way through the gum and yet have cavities on the approximal surfaces. Would it be better to cut these cavities out and fill them, they not having gone through the enamel, or would it be better to smooth them off with disks and thoroughly polish the teeth?

Regarding the suggestion of finding cavities, I have never been so thoroughly impressed with its importance as in the past year, during which there has come into my hands a family of three girls, the youngest fifteen and the eldest twenty. The mother told me that they had regularly gone to a dentist, and that their teeth were supposed to have been put in thorough order three months before they came to me. I think in neither of these mouths have I found less than fifty cavities. It is simply amazing to me. Many appear to be tiny little black spots, but many times they turn out to be in size that of two or three pinheads. I am finishing with the youngest now, and I believe I have filled every approximate surface on the bicuspid teeth in the upper jaw, the fissures in all the bicuspids, all the fissures in the molars, and the approximate spaces in many of the molars. In one or two places exposed pulps were giving trouble. I have them now in a condition where I feel that, if they will take the best of care of their teeth and visit me every three months, it will be possible to save them.

Dr. E. A. Bogue.—I certainly intended no offence to Dr. Babcock, but if the president will allow I would like to read from Dr. Newkirk's paper.

"The first permanent molar next comes in for consideration. The longer I am in practice the more do I realize the importance of this abused member. I have seen within a week a case where by six months' neglect the pulp and nearly half the crown of a lower first molar were lost in the mouth of a boy eleven years old. Another where by the early extraction of the two lower first molars the third molars have erupted at an angle of about twenty-five degrees, the second molars have decayed badly next to them, and the whole occlusion of the mouth is unsatisfactory."

Dr. Davenport brought up the history of the young lady whose teeth erupted with seven or eight cavities in each. Very curious things occur in this world. It is a curious fact that cleft-palate patients seldom or never have any surplus money, and I have also noticed that people with whole lots of cavities in their teeth never have any energy. You may think this is funny, but children whose teeth are in process of formation and who are broken down physically, so that they are unable to assimilate properly, who may be undersized, and so lax that you cannot spur them up to do anything, almost invariably erupt teeth that are imperfect. I know such a girl who is twenty-three or twenty-four years of age. She is now married, and has spruced up a great deal and keeps her teeth much cleaner. I can excuse a great deal in her because I know it is difficult for her to get beyond this very deliberate way. Dr. Davenport, of Paris, made me feel very proud one day. He made a little speech at a dental dinner, and in that speech he said that he had been intimately associated with me for ten years, and in that time he had never seen a case of pyorrhoëa among my regular patients, because I had insisted upon their keeping their teeth clean. Our late good friend Dr. Bronson gave me my first lesson in careful examination.

Now, to get down to Dr. Smith's question. He asked Dr. Davenport if he understood that I filled even the minutest points of decay in children's teeth? I promptly answer, "Yes." Then he asks this question about the incisor teeth with proximal cavities. I think it quite probable that in a case of this kind I should fill these cavities of decay with nitrate of silver until the teeth are sufficiently erupted. I have a few times removed superficial proximal decay by polishing. I have gone so far, as an object-lesson, to impress the importance of cleanliness upon my patients, as to pass a floss-silk between the teeth and then accidentally hold it in proximity to the nose. The result is usually very good. When I say I fill these cavities it does not mean that I would drill in where there are no cavities at all.

Dr. R. H. M. Dawbarn.—Allow me to apologize for breaking in on the order of the exercises. Dr. Allan courteously invited me to discuss his paper, and after reading it I would not for anything have been absent. I think he puts his finger on a condition which verges on an insult to the whole profession. I think we ought to act together. His paper, it seems to me, is a particularly broad and

excellent one. While it discusses only the subject of the tariff, the attitude of our government towards our profession in other ways should be mentioned. This is simply one of indifference; and the attitude of the public is like that of the government. We have, in a way, ourselves to thank for it, since we by indifference render ourselves a negligible political factor. There is probably no public in the world that has so small a respect for the educated men of its medical profession as the American public. I had that brought directly home to me on the occasion of the illness of Rudyard Kipling. You all remember the fight he had for his life with pneumonia. At one time or another every portion of his lungs was, so I have been told, as solid as the liver. By the exercise of the most consummate medical skill his life was spared. Now, I think that in almost any other country in the world some word of praise would have been heard in the lay papers with regard to the ability in the handling of his case shown by his physicians. In not one paper in this city, where he was ill, was the matter alluded to, so far as I observed, and I looked for it persistently. On the contrary, one and all of the newspapers commented upon his courageous fight for his life—as if that alone could have saved him!

As regards the question of taxation, it is true that we are taxed tremendously, worse than in any other country in the world on everything in the way of surgical instruments. Skeletons are not taxed. I am sure I do not know why, unless the government does have a little hesitation in taxing dead men's bones. (Skeletons are almost invariably imported. They come from Paris and Vienna chiefly.) But to look at the subject in a broader sense, not alone in regard to the tariff, take the topic selected by Dr. Gerster, then president of the New York Surgical Society, in his annual address. He discussed the utter negligence of the American public in regard to its financial duties towards physicians. It is a fact that in New York City, as recently proved by legislative investigation, nearly one-half of the entire population are treated free of charge in the dispensaries and hospitals, and that estimate does not include those treated free in doctors' offices nor in the tenements. He called attention to the disgraceful fact that in American hospitals the visiting physicians and surgeons are not paid one penny; whereas abroad there is hardly a hospital where the reverse is not the case. In England, France, and Germany there is a decent compensation for the time of these physicians and surgeons; and in return the

managers require regular attendance, which here they do not always get. I am glad to say that your branch of our profession is at last being recognized in hospital work, and now in at least two of our greatest hospitals (the New York City and the Kings County) dental surgeons are members of the staff; and if the time ever comes when physicians and surgeons are compensated, they will be compensated too. In London the greatest hospitals have visiting dentists. At the present time these dental surgeons in the New York hospitals occupy the same positions as the pathologist; they have all other privileges of the medical board, but they are not allowed to vote.

For the public lack of attention to its duty towards the medical profession we are ourselves partly to blame. Dr. Allan has stated that there are twenty-five thousand dentists in this country; and there are probably also one hundred and fifty thousand physicians. If all these, or even a large fraction of them, could work in harmony, think what a power we could wield politically, particularly in this matter of the tariff! It is especially so now, as the time has come, as President McKinley said in his last speech, when a tendency towards a diminution in the tariff duties seems to be in order. It has long been my hope to see, in matters affecting the common good of the medical profession, more uniformity of action. The present attitude seems to be that those who are the "outs" as to hospital appointments are pleased rather than the reverse that those who are the "ins" do not receive any salary. And upon the tariff physicians vote without thought as to the interests of their profession. That attitude we can overcome, I think, only in one way,—by every medical society constituting itself a political camp; not to discuss Republicanism or Democracy,—for I should deplore bringing up non-professional discussions,—but for the purpose of trying to induce its members to act together, harmoniously, and with force because of members, whenever matters affecting our common welfare as doctors are subject to public ballots. The tariff is surely one of these.

An invitation to the Institute to attend a meeting of the Second District Dental Society was read by the secretary.

Upon motion, the invitation was accepted.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

THE annual meeting of the Institute was held on Tuesday evening, December 3, 1901, at the office of Dr. S. E. Davenport, No. 51 West Forty-seventh Street, New York. The following officers were elected for the year 1902 :

President, Dr. J. Morgan Howe; Vice-President, Dr. A. H. Brockway; Treasurer, Dr. J. Adams Bishop; Recording Secretary, Dr. F. Milton Smith; Corresponding Secretary, Dr. George A. Wilson; Curator, Dr. J. G. Palmer; Editor, Dr. Fred. L. Bogue.

Executive Committee.—Dr. S. E. Davenport, Chairman; Dr. C. O. Kimball, Dr. C. F. Allan.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE thirty-fourth annual meeting and banquet of the American Academy of Dental Science was held at Young's Hotel, Boston, on Wednesday evening, November 13, 1901, at six o'clock. Previous to the dinner, the regular business of the organization was transacted, and the following-named officers were chosen for the ensuing year:

President, Frederick Bradley, D.M.D., Newport, R. I.; Vice-President, Forest G. Eddy, D.M.D., Providence, R. I.; Recording Secretary, Walter E. Decker, D.D.S., Boston; Corresponding Secretary, Frederick E. Banfield, D.M.D., Boston; Treasurer, William Y. Allen, D.D.S., Boston; Librarian, Herman G. Hichborn, M.D., D.D.S., Boston; Editor, Charles H. Taft, D.M.D., Boston.

Executive Committee.—Thomas Fillebrown, M.D., D.M.D.; Stephen G. Stevens, D.D.S.; William H. Potter, D.M.D.

S. M. Macvane, Ph.D., McLean Professor of Ancient and Modern History in Harvard University, was the guest and principal speaker of the evening.

President Pond.—It is my very pleasant duty to welcome you here to this thirty-fourth annual meeting. I remember very well at our twenty-first annual meeting Dr. Elisha Tucker was present, and he spoke of some of the early work of the Academy, and its struggles, and congratulated us upon having reached the age of twenty-one years. He expressed a hope that, having become a full-grown man, twenty-one years of age, we would continue and do a man's work.

I think this last year we have continued in a way that would please him. We have had our regular meetings, with one or more papers at every meeting, and discussions on them. The membership continues at its height, and the treasurer has been able to meet all bills. We have certainly had a prosperous year and done good work.

Dr. Tucker spoke of its meetings, and efforts to do away with little petty jealousies that seemed to be alive at that time, of trying to help each other, and trying to give professional standing to the dentists. It seems to me that we, individually and collectively, have yet a good deal of work to do, something that we can do, something that we ought to do. One of the first things is dental education. We are constantly hearing of the requirements for admission to the schools. At a recent meeting of the Twentieth Century Club, President Eliot said that the schools of divinity, medicine, and law have now reached a point where they require a college education for admission. They apparently have reached the highest point possible. The discussion continued in regard to the education of school-teachers. Normal schools are established like our professional schools, and formerly many of the applicants have not even had a high school education. Now they are calling for a college education as a requisite for admission.

What are we going to do about this? How long can we continue with our present standards of education? We cannot stand still. If the others are advancing—and we know they are—they will leave us behind, unless we advance with them. We must keep up with this standard set by the other professions. Perhaps we can do something the coming year, individually or collectively. The dental schools were brought into existence by the profession. Now, without doubt, if the dental profession call for a higher standard of education, work for it, and support it, the dental schools will meet that demand. If we are to stand with the other professions, we must equal them.

This leads almost directly to another subject, and that is our laws. The only justification of a law regulating the practice of dentistry, or any other practice, is to take it on the ground that it is a protection to the people. Laws are not passed intentionally or directly to benefit you or me, but to protect the people. Neither are they intended to work a hardship upon any one. The practical application of our laws to-day certainly works a hardship on the

dentists. If any member of this Academy, certainly a practitioner in good standing, should have to leave the State, what is he going to do? He cannot practise. The average man, after a few years' practice, cannot pass the examinations. Of course, we can become day laborers, but we cannot continue to be dentists. In Dr. Andrews's paper he mentions a man who could not pass the examination papers, although he had been a successful practitioner for many years, and was a regular graduate of a dental college; and a member of the examining board in a neighboring State was unable to pass the examinations of our board recently. I do not suppose that we of this society would fare much better if we should try. That is a thing that we should work against: it is entirely wrong, and we should try to remedy it.

That comes back again to the question of education. When anything is said about accepting the examinations of one State in another, we have to meet the difficulty of the difference in the standing of schools. One State feels that the examinations of the others are not their equal, and they are not accepted. It seems to me that we can do, and ought to do, considerable work in the direction of equalizing the standard of the schools and the examining boards, so that we may not cease to be dentists if we happen to cross a State line.

There is another point that was spoken of at that time. I was looking over the records of some of the earlier meetings, and they seem to have interested themselves very much in what might be called the proprieties of professional life, the relation of the dentist to the general public; not entirely to the patients, but to the public at large,—our standing with the general public. I remember when I was a student, twenty years ago, it was the aim and ambition of every young man, in starting for himself, not only to get a practice, but to observe the outward proprieties of practice. This idea was impressed upon us by our teachers. It was the desire and aim to be established in a house with professional surroundings: that seemed to be the expected thing then. It seems to me there is to-day inclination on the part of our young men, young men who are graduates of good schools, to go perhaps into the business section of the city and take a room not specially adapted to dental practice, a room surrounded by that which is certainly not professional; perhaps on one side Dr. Humbug No. 1, who tells your fortune from the stars; and on the other side Dr.

Humbug No. 2, who has an electric belt, and cures everything. This is not at all professional. The rooms are perhaps fitted up with two or three slight partitions, the same as you see manicure parlors, chiropodists, magnetic healing apartments, etc. And the young men start in practice in that way. It seems to me that there is something that we can perhaps work against and possibly do something to change the ideas and tendencies of many of our young men. If a man is seen on the street in jumper and overalls and with a dirty old hat on, and he is offered a job as a laborer, I do not believe he would feel that it was anything more than he should expect. A gentleman told me that in England a man could not succeed in practice unless he wore glasses and evening dress all day. Perhaps it is carried a little too far there, but it seems to me that our young men should be interested and given a tendency to different things, so they will observe the proprieties of a profession. I fail to see, if a man is in these surroundings, how we can expect, and how we can expect, the outside public to distinguish that one as reputable and the other one as a humbug; and it seems to me that if these things are to continue we can hardly expect to be called professional. We may be called professional men in the same sense that a boot-black is called "professional."

This, as I say, is our thirty-fourth annual meeting. Following the usual custom of our annual meetings, in which we depart a little from our regular dental papers, and make it an enjoyable occasion, having a paper or talk by somebody on some special subject not strictly dental, but of great interest to us, we have with us to-night Professor S. M. Macvane, Ph.D., McLean Professor of Ancient and Modern History in Harvard University. It gives me great pleasure, gentlemen, to present Professor Macvane, Harvard.

(For Professor Macvane's paper, see page 156.)

DISCUSSION.

Dr. Fillebrown.—I would like to ask a question or two on this point. The subject interests me very much.

First. How much have the entrance examinations of our colleges been increased within the last twenty-five years? That is, how much more must a man know now to enter Harvard than was required twenty-five years ago?

Second. Whether the scientific studies that are now a part

of the professional course, say anatomy, physiology, chemistry, biology, are not as valuable towards acquiring the A.B. degree as studies that are purely literary in their character?

Third. Whether the objection to the year spent in a professional school, if spent in any other school, would not be answered by the fact that a man who wants a Harvard degree is expected to pass Harvard examinations? To suppose an extreme case, if a man had spent his three years in Harvard College, and desired to graduate in medicine from Columbia University, he goes to Columbia and spends his fourth year, passes his examination, and graduates. Now, if he wants the Harvard degree, it belongs to him to come back and pass the Harvard examinations; and I ask whether it would be any lack of courtesy towards these institutions, or education at large, to require that? We cannot conceive of Harvard giving degrees on any other institution's examinations, particularly as she will not even admit them to preliminary grades in the college on a certificate of any other examination than her own.

Professor Macvane.—As for the first question, gentlemen, I think nobody could answer it; I am sure I cannot, because you would have to get, first of all, a set of men who were examining candidates for admission twenty-five years ago, and are still at the business. This is a matter that cannot be accurately measured by any person, but there are some materials for a judgment about it. We have added some subjects to the requirements: for instance, twenty-five years ago there was no requirement in modern languages. A man came into Harvard without either French or German. Now we require both French and German. And a new requirement in physics is added: I do not remember the date, but not very long ago. That has become, I understand, rather a formidable requirement. Probably in all the subjects there has been some increase in the severity of the tests.

I suppose the surest evidence on the point would be found in the average age of the men who pass, and that has risen, certainly. Whereas fifty years ago men were able to get into Harvard at between sixteen and seventeen, they are now between eighteen and nineteen. For a dozen years, ending with 1897, the average went even above nineteen, but it is below now. Whether the rise of age is wholly due to increasing hardness of the examinations and the addition of new subjects, nobody can tell. I think it is

partly due to these things, but I have no doubt it is also partly due to the increase of other attractions to our young men in the school.

Teachers will tell you that it is increasingly difficult to get things done in the foot-ball season and in other seasons. There are other attractions. Social life in America has become more varied and much more attractive. Young people will not spend so long a time, and their parents will not drive them to spend so long a time, over their books as your fathers and grandfathers did. American parents, in my observation of them, do not want their sons and daughters to work very hard: they do not see the need of it. A mother will take her boy off on a trip to the country, let him see a foot-ball match, or go to some entertainment, now for days; when, of old, a mother would say, get down to your geometry or your algebra. The spirit of study in the schools is as good as ever, but the difficulty of getting things done is increasing. So I think the rise of age is partly due to that fact; and there may be other things that influence it. The unmistakable thing is that there has been a rise in the age, very decidedly. It is of late tending downward again, we do not know exactly why. Possibly in Harvard it is due to an increased freedom of choice. We do not now drive anybody to take so great a quantity of prescribed subjects, nor do we require both Latin and Greek. If a boy does not like the ancient languages, he can cut one of them out altogether and substitute other things. For his so-called "advanced subjects," his special and best work, he has a wide field of choice so he and his parents and his teachers can consult his native bent and ability. It is found that students will do more of things they choose for themselves than of things we impose upon them; as the greater freedom of study is tending, we hope, to shorten the period of preparation for college.

The question as to the comparative value of scientific and literary studies in training the mind, is one as to which the world has had much debate, and probably will have more. The practical solution adopted by Harvard is to demand mainly a literary training as a preparation for entrance to college, and to give students once admitted almost complete freedom in the choice of studies. In college work scientific and literary studies are put on a basis of equality.

As to the other question, of counting for our degrees what is done in other places, my friend, Dr. Fillebrown, is mistaken

one point. We do that already. We admit to Harvard College every year scores and scores of men who have not passed our entrance examinations, but have passed and studied in other colleges; we admit them on their record. Many are thus admitted even to the senior class, and get their Bachelor's degree in one year.

As to the administrative side of this question of counting work done in other colleges, there would be great difficulty in testing it by any Harvard examinations. Our ordinary examinations would not fit their courses. We have not courses corresponding exactly to what they offer at other places, and so we should have to make special examinations for each applicant, which would be a great burden. Further, we are not willing to say that college work consists in passing examinations any way. We try to keep examinations as far as possible in the background, and to insist that men are there for work and not to pass examinations. So we prefer to judge candidates by the rating, and the testimony of their previous college teachers.

Dr. Fillebrown.—The third question was, how far purely scientific studies that are taken in a Harvard professional course can be counted towards the fourth year. I believe the matter has been discussed whether physiology and chemistry, and those purely scientific studies, may not come in as a choice for the fourth year.

Professor Macvane.—Some of them do. We offer some courses ourselves in the scientific departments that appear substantially to duplicate courses in professional schools. This matter is in the hands of our scientific professors. I think the faculty will admit any scientific work that those men say ought to be admitted to count for the college degree. And what they say, as I remember, is that where you are carrying on a strictly professional course, as in most of the schools, the method is usually narrow and technical, arriving at a specific practical result by the shortest road. It is the old-fashioned way of packing a man's mind full of the facts, or of giving him the mechanical skill that may assure him success in the money making business. That is said by persons who are supposed to know about this work. If you can satisfy our scientific men that the work in any such course is done in the scientific spirit, they will, I think, accept it to any extent for college purposes.

Dr. Fillebrown.—That will shorten one course or the other?

Professor Macvane.—It may. That is the result in the Harvard Scientific School. A graduate who has taken courses in college that count in the scientific school can get the Bachelor Science degree in two years; and I do not know but that he could get it in one year after graduating from college.

Dr. Fillebrown.—I wish, if the time will serve, the subject might be opened up to the remarks and questions, because it is a matter that is interesting to every man. Others may have questions that they would like to ask.

Dr. Smith.—The remarks of Professor Macvane have been doubly interesting to me, inasmuch as my work places me in the atmosphere of education,—dental education, in particular,—and I have, therefore, been somewhat in touch with the problems which he has so ably presented.

It is quite true that the requirements of the professional schools, and especially a majority of dental schools, have been, and are, very low. And I could not help thinking, Mr. President, when you were speaking, and comparing the dentist, or rather, the education of the dentist, with the education of the physician or surgeon, that it was a bit unfair to cite, as many do, the requirements for Johns Hopkins or the Harvard Medical School as the type representing the standing of a majority of the medical schools.

Now, this is not true. A majority of the medical schools are to-day admitting students to medical education on very low requirements, and largely for the reason that the professional schools are generally without endowments, while colleges are well endowed and are not wholly dependent upon receipts from students, as are professional schools.

There is another thing that dentists do not consider sufficiently. They are always comparing the attainments of the dental profession, which is a very young profession, with the attainments of the medical profession, which is a very old profession. They should compare the standing of the medical profession at the close of its first forty years with the standing of the dental profession during a like period.

This matter of dental education presents itself in two ways: first, the preliminary requirements; second, the degree which the dentist should receive. On the one hand we have advocates of the degree in arts or letters for the student who enters the dental school; on the other hand, in addition to this, we have the adv

medical degree for the man who is to become a dentist. To adopt both of these requirements, what does it mean? The course is to be four years, and the student does not graduate until about eighteen, he is twenty-two years of age when he receives his Bachelor of Arts degree. If he receives a medical education, that means four years more, and brings him to twenty-six. And then, if he is to be any kind of a dentist, he certainly needs, in addition, two years' study in dental subjects applicable to the specialty of dentistry, including clinical training. That makes him twenty-eight years of age when he goes out into the world to practise,—too late in life, for a man to begin his professional work.

Now, I have been a believer and have used what influence I can to bring about the higher preliminary requirements for entering the dental profession; believing that the medical education even to-day, is not at all necessary for a dentist. It is my belief that there are a great many medical subjects which a dentist should know and which he gets in the better dental schools. It is my belief (if I may be allowed to speak for the Harvard school, I am interested) to bring its preliminary requirements up to the A.B. degree, making it a graduate requirement of the University. And, looking to this end, we are in our present catalogue that in June, 1904, and thereafter, the requirements in English, physics, either Latin or French, and chemistry will be obligatory, and also an elective of either German, French, or shop work, such as is given in the Lawrence Scientific School (believing that the dentist should have these technical requirements). These examinations are to be of the same standard as the examinations to Harvard College, and to be taken at the same time and places. This, I think I may say without exaggeration, is a step in advance of other dental schools.

Dr. Smith.—I want to express my appreciation of the way in which the subject has been presented to us this evening by Professor Lawrence. It seems to me the most important subject that has been considered at the present time.

Dr. Lawrence.—I have long held the opinion which Dr. Smith has expressed, that the greatest need of dental students need most of all is adequate preliminary education. Recently I read in a German dental magazine a long article by a committee appointed to investigate and report upon the requirements in dental schools. This committee had come to this

country and had looked into all the dental schools, and they made an extensive report as to their condition. The main criticism made by the committee was that the preliminary qualifications for entrance to the dental schools were entirely inadequate. And it made this further remark: "Of course the Americans are very skillful in practical matters; they are not sufficiently educated to busy themselves about purely scientific matters." And that is partly true.

Dr. Fillebrown asked a question which perhaps I can answer. He asked how the entrance examinations at Harvard College differ at the present time from those held twenty-five years ago. I took my entrance examination to Harvard College more than twenty years ago, and I know something of their difficulty at that time. During the last year I have had occasion to examine the most recent entrance examinations, and I am sure that they are more difficult than those of twenty years ago. There are additional subjects, as Professor Macvane has said; but, more than that, the individual examinations are more difficult, and it requires a better trained man to pass the examinations now than it did in my time, although we thought at that time the examinations were quite severe.

I am very glad this subject has been brought up. It seems to me the most profitable and instructive subject we have had at an annual meeting for a long time. I believe when we discuss matters of liberal education we get at the root of progress in dental education.

Dr. Fillebrown.—Just one more question. How much time does this advance represent? How much longer does it take a man to fit for Harvard College to-day than it did twenty-three years ago?

Dr. Potter.—As I remember, when I entered college the average age was eighteen. Professor Macvane says it is now a trifle over eighteen.

Dr. Fillebrown.—I do not think that would answer my question. My question is, no matter whether a man is forty years of age or fifteen; if he could pass the examinations that you passed twenty-three or twenty-four years ago, how much longer would that same man have to study to prepare himself for the examinations to-day? That is what I mean, without reference to his age.

Dr. Potter.—That is rather difficult. I suppose methods for fitting men have improved. Very likely they can fit men just as quickly now for the harder examinations as before for those not so severe.

Dr. Fillebrown.—What I was after is the time element, as there is so much said at the present time about its taking a man so long and his getting so old before he enters his profession, commences his life work. I wanted to get some idea of how much more of a man's life it is taking to prepare for college now than in former years, or if it can be done in the same time.

While I am on my feet, I want to refer to the statement that was made in regard to the medical degree for dentists. The position of those who advocate that degree is not generally accurately stated, and it was not quite accurately stated to-night. I do not mean not fairly stated, but not accurately stated. We all know that President Eliot a few years ago at the alumni meeting of the Medical School advanced the position that the condition of medicine to-day is similar to the condition of literary studies at Cambridge. There they have a series of courses that, if one man took all of them, it would take him about twenty years to complete them. Yet from all that mass of courses a man may select a course that will lead him to his Bachelor of Arts degree in four years; or, in an exceptional case, in three years. President Eliot went on and stated that the science of medicine at the present time covered so wide a field that if a man should complete his studies in all the branches, it would take him at least twelve years to do it. He said Harvard University to-day ought to offer courses in medicine that it would take a man a good twelve years to complete and become fitted in them. Few men can afford to spend that time. There ought to be a series of courses presented that lead to the M.D. degree, that a man could complete in four years and know something nearly complete about some branch of medicine that he wants to practise. It is no longer possible for one man to do everything, all the way from dentistry to obstetrics.

I am one of those that for twenty-five years or more have persistently, in season and out of season, advocated the idea of a medical degree for dentists, that dentistry is medicine as much as removing the *faeces* from an impacted anus, or a piece of wax from an ear. Now, I say that dentistry is essentially a medical occupation, and the dentist is entitled to have the same standing as

the surgeon, the oculist, the aurist, or any other of the medical specialists. I say that the practical part of medicine is as much a part of the medical course as is the theoretical. It is as essential to know how to apply medicine as to extemporize a splint for a broken limb in the wilderness. That is a part of the requirements for his degree. So it should be a part of the requirements for the medical degree that a man should know something about dentistry. He must know whether he is treating a simple abscess of the jaw, or a necrosed bone or a cancer. I have had cases after cases where patients had been operated upon for necrosis of the jaw, when all the trouble with them was a piece of tooth root left in the jaw, which was keeping up a continual discharge from an abscess.

The thing is to make the dental course one of the medical courses. That is, the practical part of the dental art shall come in as a substitute for some other course, and so educate the man and make him a practical dental specialist. Medical students ought to be made to know something about the treatment of diseases of the jaw dependent upon the teeth. So, when the medical degree for dentists is being represented, I hope it will always be borne in mind that that is what it means. It does not mean that practical dentistry shall be sacrificed, but that it is to be substituted; that is all.

Dr. Smith.—I was talking with my neighbor, Dr. Banfield, when Professor Fillebrown opened his remarks, but I think he said something about my not stating something fairly. It seems to me that the logic of Professor Fillebrown's argument is that the medical man needs a dental education, rather than the dental man needs medical education. I have always had the highest regard for the men in the past who took the dental degree, when it meant but very little, for eking out what they did not get in dental education by getting the medical degree.

Now, for the benefit of some of you who cannot know what the medical degree meant forty years ago in the Harvard Medical School, let me relate it. Not more than thirty years ago a student entered the Harvard Medical School without any preliminary examination whatever. Many of the students could scarcely write a legible hand. The course was two terms of six months each, and the second term was a repetition of the first term. Bacteriology, histology, pathology, physiological chemistry, and compar-

tive medicine were comparatively unknown. At the end of the second term the applicants for the degree went before their professors for examination,—six professors, I think; and, after an oral examination, a majority vote decided the fate of the applicant. Dentistry, even at its worst in educational matters, was never quite so bad as that.

Unless one is in touch with the educational methods of to-day, they have not the remotest idea what a medical education means. This elective scheme in medical education, which Professor Fillebrown emphasizes to-night, is, it seems to me, very much limited in its application, and I find that the medical educators find it so themselves. In college a student must cover eighteen courses for the Bachelor of Arts degree. A and B may start side by side for that degree, and take almost entirely different routes, and both receive the Bachelor of Arts degree. That degree stands for a certain amount of general mental training, while with professional education there must be exact training for a specified practical purpose.

I admit that dentistry is a specialty of medicine, and we need much of medical training, but not all, and the question is where to cut down the courses in our present high standard medical schools and adapt them to our needs as dentists. I know from observation that a man wishing to become a dentist needs, after receiving his medical degree, two years of training in subjects that directly deal with dentistry. I have observed that many men who hold the degree in arts and the degree in medicine, are yet unable to pass the examinations and the requirements of the dental school in less than two years. I believe that with the immense technical requirements upon a dentist of to-day, he has got to curtail in his education somewhere; and I am not one who advocates the curtailing in the preliminary requirements.

Dr. Fillebrown.—We are soon, no doubt, to have a four years' course in our own school, an equivalent in time with the medical school. Now, when the time comes that medicine is taught as I believe it should be, and men are graduated competent to practise the various specialties which they want to pursue, the first two years are going to be devoted to subjects which we all admit are good for use in any practice whatever. These two years will cover more medicine than was covered in the medical schools only a few years ago, a great deal more than is given in any dental school

to-day. Then the other two years will be left for the acquisition of the practical part of dentistry. They will also be given to the acquisition of the practical part of each other specialty, whichever man chooses. The general practitioner will then become a specialist. The man who wants to go into the country and practise becomes a specialist, because no man can fit himself as a general practitioner and still be up in all the various specialties and do the finer work in surgery and the finer work in the eye and ear or in any one of the specialties that are practised to-day. It is now the practice of most all the general practitioners to send patients to the medical centres for special operations.

Now then, you say that if this system is to be adopted, a man will wander around from one specialty to another after he gets his degree and finally settle on something that he will like. To-day if a man wants to graduate in medicine he has to spend two or three years or more on his specialty after graduation, perhaps as much time as he spent in his special course. I say, when a man graduates from the four years' course, he ought to be fairly expert in one department. A man cannot practice and cannot fit himself in a lifetime in all the specialties that are offered to-day. To-day the medical degree represents every specialty that is now practised except the one of dentistry, and why should that be left outside?

Dr. Williams.—Perhaps a little history in this matter would be appropriate. After a long illness, which interrupted my college life, I was advised to study medicine, but was told that I would not be strong enough to practise medicine, with its exposures and hardships, and was again advised that I had better take some specialty,—get a chance to study dentistry, perhaps.

In Boston, Dr. Harwood, Dr. Flagg, Dr. Keep, and Dr. Tucker were the principal dentists then, and none of them would take a student unless he would agree to go through a medical course, and understand the general principles in order to know how to apply them to his specialty. I went into the Harvard School (Tremont School they then called it), in which the professors taught classes. Dr. Holmes was one, Dr. Bigelow, Dr. Ware, and several others. I also attended the winter courses. Then only three years were required. I took four years for the whole before I graduated and took my medical degree.

Those medical courses were very simple, but they did not leave the general principles of medicine for the minutiae of specialties.

and time was taken for investigation. They were taught by practitioners of medicine, generally of experience, enough of the general principles of medicine to know what effect carious ailments would have on the welfare of the general system. That school graduated some noble men, like Henry J. Bigelow, our present Dr. Cheever, Hodges, Charles Homans, and several other very noted men who were grounded in the general principles of medicine and surgery. They knew how to apply what knowledge of medical principles they had learned to their specialty. The oculists also got a knowledge of general principles. Like an agriculturist, for instance; one may want to cultivate flowers and fruits, but he learns the general principles of agriculture, of climate, soil, etc., and he knows how to apply that knowledge to his particular line. So it has been applied in this way. And, in fact, that is the way nature constructed the science of medicine; all the parts of the system to harmonize with the other parts in health, and to sympathize with the other parts in disease. So that, for the greatest success, one must have this knowledge, whatever the degree may be. The title sometimes amounts to nothing in practical use; for I have known men without the medical degree who have studied up, and who catch principles by hints rather than by hard studying, who were as well versed in knowledge of principles as some who have been through the course and got their degree.

For the lack of that knowledge I have seen a great many failures with some most skilful operations. I have seen several cases of fatal results from that lack, and I can tell you one. A noted preacher, not far from here, a few years ago had trouble with four of his upper incisors wearing down so that he thought his articulation was affected. And a man in the neighborhood, practising in cohesive gold architecture and contour work, boasted that he could build gold to any extent. They said he was a great "blower," and he blew so hard as to reach the ears of this clergyman, who went to him, and he hammered on that patient's teeth four or five hours a day for five consecutive days. I remember in my medical course the elder Aggasiz used to tell us in his classes how a continued comparatively slight irritation of the brain could produce a shock of paralysis on the brain equal to the blow of a policeman's club. This hammering on this patient's teeth produced the same effect. This man had jumped from some mechani-

cal work to dentistry, and as a blacksmith hammers on his work so he hammered on the patient's teeth, who thought he must be it, that a man must be superior to physical pain; and at the end of that period he was taken with a paralytic shock, from which he partially recovered and lingered for two or three years, and died. There was a lack of medical knowledge in the operator.

I could tell you of two or three other cases of too large a number of teeth being taken out at one time, producing such a shock that a person sank gradually, faded away, and died in two or three weeks. I remember my old preceptor never used to take out more than two teeth, on account of the great strain on the system required to heal a certain surface of the gum. A much greater vital force is required to heal a surface of that sort than a larger surface on the skin. That shock and strain on the system caused death in two instances from a lack of medical knowledge in the dentist giving the patient more to bear than the constitution would stand; if he had taken a general view of the patient's system and constitution, knowing the possibilities and the symptoms, he would have refrained. I could enumerate several cases of the sort.

The point is, in this matter of naming degrees, etc., they simply represent a supposed knowledge; but there are people who have that knowledge without the degree. But of course, if you want to get a degree, the only way is to go where you will get the best,—i.e., to a college of proper standing. That is one point I think, that has not been sufficiently considered in all this talk about the education in specialties, that they must not be followed out, any of them, in its line without keeping in mind the relation to the general health and the general system, and the general effect of these special lines on the main system. That is what I want to impress. The idea is just here: Dr. Fillebrown's question has often occurred to me, whether in the medical course on the elective plan some of the time might not be devoted to some specialty by the pupil, and so properly count on his medical education. It seems to me quite proper, especially if the first part of his medical course has been so thorough in general principles that he is enabled to apply those principles to a specialty.

There is another thing: in our dental schools formerly (it is much better now) students were educated by rote. The teacher came before the class with the idea that if certain things were

and so, certain things were done so and so. The point is that the great excellence in any specialty is that in technical education, which is important in any specialty, it should be accompanied and followed under knowledge of the general principles applying to that profession.

Dr. Meriam.—I do not like the idea of the college losing its position and becoming merely a fitting for special schools. It should be complete in itself. Parents have a right to draw back if the question arises, if, in sending a boy to college, they are to send him to one that is planned to be secondary to such schools. If from this the young men of to-day must be carried by the fathers until they are nearly thirty, it is more of a burden than should be placed on American life.

President Pond.—Gentlemen, I think Professor Macvane can feel that he made a very happy selection of his subject; certainly it has proved a very interesting one, and it has proved a subject that has brought out our thoughts. Is there anything more to be said on the subject?

Professor Macvane.—If you will excuse me, just a word. I was not sure, any more than the last speaker was himself, just where he was leading us. As to that one point, however, that the college tends to become a servant of the professional schools, there is something in that, undoubtedly, but perhaps not so very much, for whatever is counted now in Harvard College, so far as I know, towards the A.B. degree is certified by the experts in that field as a liberal study. It may or may not turn out to be valuable in a professional way later. It is not primarily conducted for professional ends. For instance, when you take a course in biology, it is certified to the faculty as a research into pure science. It is training in the knowledge of nature. It is true that that training may turn out later to be immensely valuable in the study of medicine, but in our use of it it is good for everybody; it is liberal education. The engineering department has grown wonderfully. You will find, in the vast array of engineering courses, only a part counts towards the A.B. degree. Those we count are courses of broad culture, rather than strictly professional courses. Where they tell us this is a strictly professional course for the engineer, we say that it cannot be counted for the A.B. degree. I do not know that we are right in all cases, but we have at least a clear principle.

Dr. Bracket.—I have been especially gratified in being present to-night, and feel that there has been said by many speakers a great deal that has been interesting, profitable, and suggestive for us to hear. Out of this annual meeting there should come much good. The ideas of all of us will be broader, more comprehensive, and more practical than they have been before.

We are under especial obligation to the gentleman who has introduced the discussion this evening, and has spoken from a broad and liberal stand-point. I move that the thanks of the Academy be presented to Professor Macvane for his effort before us.

Voted.

President Pond.—I want to thank the Academy once more for the great honor they have given me. I am sure I appreciate it very much. I want to thank you also for the very great kindness shown and the easy manner in which you have made it possible for me to perform my duties.

I believe it is one of my pleasant duties to present our new President, and I would like to ask Dr. Cooke and Dr. Boardman to escort him to this end of the room.

It gives me great pleasure to present Dr. Bradley.

Dr. Bradley.—Fellows of the American Academy of Dental Science, at this hour of the evening extended remarks from me would be superfluous. Nevertheless, a suitable recognition of the honor you have conferred on me may be in order.

I have always appreciated fellowship in the Academy very greatly, and have felt that with the privileges of fellowship comes also the duty to serve and minister to the success of the organization in every way that I could. In the position to which you have elected me, it will still be my desire to serve you to the best of my ability.

Fellows of the Academy, I thank you for the honor conferred and await your pleasure.

Dr. Smith.—With the president whose term of office expires this year, three men retire from office this year,—Drs. Pond, Perrin, and Payne. The committee tried in every way to have Drs. Perrin and Payne continue in service. They have both served the Academy faithfully and well for a number of years, and evinced a strong desire to be relieved of the cares and duties attending their respective positions. So I move you, Mr. President, that a vote

of thanks be extended to the president and the other retiring officers, for their efficient and able service.

Voted.

On motion, adjourned.

CHARLES H. TAFT,
Editor American Academy of Dental Science.

INTERNATIONAL DENTAL FEDERATION.

(Continued from page 135.)

INTERNATIONAL COMMISSION OF EDUCATION.

London, August 5, 1901.

THE meeting was called to order at 5.15 P.M. by Dr. Godon, president of the International Dental Federation.

The following members answered the roll-call: Drs. Brophy, Bryan, Aguilar, Godon, Sauvez, Queudot, Viau, Roy, Harlan, Kirk, Förberg, Haderup, Zsigmondy, Frank, Baruch, Quartermann, Huet, Hesse, and Weiser.

Dr. Förberg presented, on behalf of Dr. Sandstedt, of Stockholm, excuses for the absence of the latter.

Dr. Godon said that the commission would proceed to the election of officers for the present session, and that at the last meeting the commission would decide whether the officers elected should continue in office for another year or not.

Dr. Aguilar proposed the appointing of a committee whose duty should be to nominate the officers.

Dr. Godon made a motion to the effect that the officers of the International Dental Federation compose that committee. Carried.

During the absence of Dr. Godon (who left the meeting for a short time with the officers of the International Dental Federation in order to discuss the question of nominating the officers of the International Commission of Education) Dr. Frank occupied the chair.

Dr. Brophy then opened the general discussion upon Dental Education.

The following report was then read by Dr. Zsigmondy:

REPORT ON DENTAL EDUCATION (BY DRS. ZSIGMONDY AND WEISER)

In Austria, dentistry has always been considered as a part of surgery. In spite of the defects and errors of the law, and also notwithstanding negligence of the government in its application, this law has always required that the dentist shall have completed his medical studies before being allowed to practise dental surgery. The physicians in Austria do not want this condition of things changed. Even by making the greatest concession and fully acknowledging the modern progress, it cannot be admitted that dentistry is composed of two-thirds of manual training and one-third of surgical science. We see every day in our practice that the latter third is a very important factor in dentistry. We also see that it is very difficult for a physician to become familiar with the technical details of the third of this art, while, on the contrary, it is very difficult for the dental mechanic to acquire the said one-third of surgical science necessary for the treating of diseases consecutive to disturbances of the teeth,—that is, diseases of the gums, of the jaws, of the maxillary sinus; also to possess himself of the necessary knowledge required for the administration of general and local anæsthesia. It is absolutely indispensable that a dentist should know the course to be followed in cases of this sort, for incertitude may have very disastrous effects. During the last ten years we find more than one antagonist to this opinion, on various grounds, and in support of their arguments against the study of medicine by the dentist they claim that in order to become a good dentist manual training should be begun at the age of fourteen, or eighteen at the latest. This argument is contestable in itself, and also because the contrary is every day evidenced. It is contestable because every one who intends to follow the surgical profession must possess a certain degree of dexterity and manual training, and it is certain that this dexterity will be increased through anatomical studies, the making of microscopical preparations, the use of chemical and physical appliances, also by operations upon living and dead subjects. This refutes the fact that the number of Austrian *médico-dentistes* capable of making their own prosthetic work is becoming more limited every day. It is also refuted by the scientific literature of ancient date, in which we find important works by Austro-Hungarian writers, just as at the present time our authors have acquired a reputation in the branch of dental literature. We see that in Austria reviews are published composed principally of papers by Austrian writers. This comparative great development has taken place in spite of the fact that we have only three clinics or dental courses poorly endowed by the state (and this only very recently) and one supported by private funds.

By comparing this development with the erroneous position in which dentistry finds itself to-day in the countries where this part of medical science has not been or is not protected by appropriate laws and by good special schools, but on the contrary is open to any one, it can be easily seen that this result has been attained only by the fact that in Austria

dentistry has always been in the hands of physicians who do not spare any time, work, or material sacrifice in order to improve their manual abilities, either by means of special studies or else by taking courses at foreign colleges.

The *médecin-dentistes* of Austria observe with satisfaction that their art has attained in their country the same degree of perfection as in the majority of the other states of Europe, and this notwithstanding the limited number of special clinics and their small endowments. By the new method of examinations of the medical school, which becomes legal in 1903, dentistry will be a compulsory study, and the government having promised the organization of new clinics and new courses in all our universities, this progress will take considerable proportions,—in fact, the development of medical science will lead necessarily towards a complete reorganization of the study of medicine. It is inevitable that the students shall take up at first and during three or four years the study of the general and theoretical branches of this science, general and pathological anatomy, physics, chemistry, physiology, general pathology, microscopy, bacteriology, internal medicine, also a second course of about two years, which would be devoted to the special branches of medicine. Nevertheless, it should not be thought that because we are optimistic we are also blind to the defects of the method of examination of our schools of medicine, defects that cannot be denied, any more than can the errors of our legislature with regard to this subject,—that is, that the degree of dentist is not absolutely connected with examinations and with sufficient proofs of special studies in this important branch of medical science. The corporations of *médecin-dentistes* of Austria-Hungary many years ago made fruitless efforts to bring about a change as to this, but the government has remained indifferent, because it does not attach enough importance to it, and also because it does not want to go into the expense of organizing new courses and new clinics; but if this effort has not yet succeeded, we hope that the official representatives newly created by the “Aerzteammer,” and particularly by the “Organisation der Aerzte,” will be more successful. At the present time they are working with the government to the end that doctors of general medicine who have given proofs of their aptitude by means of special studies and special examination shall alone have the right to practise dentistry. The dentists of Austria are persuaded that this is the only way of putting an end to the controversies between the *médecin-dentistes* and the technical dentist. They hope this inasmuch as in Italy and other countries it is also desired that the dentists shall be doctors of medicine, and in Germany a congress of professors of dentistry has been organized in order to ask the government that the study of this part of medical science shall be accessible only to students that have passed their baccalaureate degree. This congress made a petition to the Council concerning changes in the examinations by which the studies and examinations in dentistry shall be made to resemble the studies and examinations in medicine. The Austrian dentists are of the opinion that it is their duty to defend and improve the system in vogue in their country, which looks upon dentistry as a specialty of medicine.

Dr. Haderup.—We have just heard the exposition of two perfectly opposite principles. The Austrian representatives believe that dental education should have for its basis a complete medical education, while Dr. Brophy, of Chicago, on the contrary, asks that the future dentist should be first of all a practitioner and that he should receive his complete dental education in a dental school.

Before giving you my opinion on this capital question, I want to explain my position. I began the practice of dentistry twenty-four years ago; at that time I was a physician, and my opinion on dental education was similar to that of the Austrian representatives, but at the present time my opinion is different, and for thirteen years I have believed that complete dental education should be given in a special school. The experience that I have been able to gather in this direction has also confirmed my opinion that the dental students should only take up the medical studies necessary for the special calling, and that the theoretical and practical instruction should work side by side and should be given as far as possible in the dental school itself.

As far as the essential points of this problem are concerned, I must say that I agree with Dr. Brophy's observations; however, he seems to me to have a tendency to consider all the branches of dental education as being of a purely practical nature, and to accord only a very small degree of importance to the theoretical subjects.

He is right if he refers to the sterile theories which are in no way connected with the teaching of the practical subjects, but my personal opinion is that the dentist cannot do without the scientific knowledge which forms the basis of practical education in all walks of life. In one word, dental education must be not only practical but theoretico-practical.

Dr. Godon at this point resumed the chair and announced that the committee had made the following nominations: For president, Dr. Brophy; for vice-presidents, Drs. Zsigmondy, Kirk, and Paterson.

The meeting then proceeded to vote upon these names. The gentlemen whose names were proposed were elected to their respective offices.

London, August 6, 1901.

The meeting was called to order at 10.45 A.M. by President Brophy, the following members being present: Drs. Brophy,

Aguilar, Bryan, Hesse, Zsigmondy, Weiser, Baruch, Frank, Huet, Quattermann, Queudot, Sauvez, Godon, Viau, and Roy.

Dr. Sauvez announced that the Executive Council had appointed Drs. Bryan, Haderup, and Zsigmondy members of the Commission of Education. He then explained Dr. Godon's motive in having at first resigned his office in the International Dental Federation, which was that the position vacated might be open to the other nationalities.

Dr. Brophy then announced that the next thing on the programme was the continuation of the discussion upon dental education.

Dr. Aguilar said that he was very happy to see the organization of the International Commission of Education according to the resolution that he presented to the Congress last year. Replying to Dr. Brophy, he said that his opinions (Dr. Brophy's) could be applied to the United States and to countries where dental education is organized, but that in the countries where dental education has not as yet been organized they are not applicable, as in such a case nothing can be done without the help of the government, and hence the intervention of the university cannot be avoided. Dr. Aguilar said that the general education of the dentist should be similar to that of the physician, and hence the scientific and medical branches should be taught in the schools of medicine, which are the most competent ones for this purpose.

He asked that the commission should determine the subjects that dental education should comprise.

Dr. Hesse said that the question of how the subjects should be taught should not be taken into consideration, and that instead it should be decided what subjects should be included in the dental curriculum.

Dr. Roy.—This discussion is a very important one, as opportunity is given to us to hear the views of the representatives of two opposite parties,—those who claim a medical education for the dentist, and those who are of the opinion that to the dentist a special education should be given. The controversy between these two parties is not a new one, as we find it at the beginning of the organization of dental education. The first dental school, the Baltimore College of Dental Surgery, was founded only after many unsuccessful attempts to institute the teaching of dentistry in the medical schools. It was the foundation of this school that initiated

the autonomy of dentistry. This difference between the two principles, the medical principle and the odontological principle, is not only a very ancient but also a very general one, and is found in all countries to a greater or less degree.

What are the reasons for the sometimes very warm controversies between people who are animated with the same ideal,—the progress of the profession? The reasons are to be found in the special features characteristic of dentistry, which is a mixed profession and in the fundamental nature of the problem calling for decision—viz., whether dental education should take for its basis the medical studies, or whether the dental studies should constitute an autonomous education.

Those who have medical tendencies think that dentistry is a branch of medicine to the same degree as ophthalmology or laryngology. For them, consequently, the study of medicine represents the best preparation for the practice of this specialty, the distinct practical subjects being acquired very quickly. Following this line of thought, Dr. Arkövy told us yesterday that six months of special study is all that is required. Those of the opposite party, on the contrary, proclaim the autonomy of the profession. While acknowledging that dentistry has some points in common with medicine, such mutual borrowings as are frequent between the sciences, they claim that skill plays a very important rôle in the practice of dentistry; that this skill takes time and is difficult to acquire and that it is not very much to devote to it a few years of progressive training of the eye and hand.

Hence, I think that the whole problem resides in this difference of appreciation of the time necessary to acquire manual skill. Some think that this should be of short duration; others, on the other hand, that it should be of long duration. There is, in fact, a point that should be established at the beginning of this discussion and this is that it is not possible in four or five years to become both a good physician and a good dentist; it takes almost ten years. But such a long period of study is impossible to require either from the medical or from the dental student. The result of such a measure would mean the diminution in the number of dentists, and this I think would prove to be most detrimental in the sense that those with limited means could not have their teeth attended to, as the diminution in the number of dentists would result in the raising of fees. All classes of society should be able

to profit by the progress made by dental therapeutics, and I do not agree with Dr. Guillermin, who, in the report that he read yesterday, complains of the large number of dentists and of the tendency to use charlatanic proceedings which are detrimental to the dental profession and which are brought about by this accumulation of dentists.

The medical degree for the dentist is only an exception. Note the conditions existing in Austria, where this diploma is required; there is, in spite of all, a special group, the *Zahnkünstler*, which make a competition to the *médecin-dentistes*, naturally brought about by the reasons I have pointed out to you, and if the *Zahnkünstler* exist it is because they answer an existing need. Hence, as I think I have proved that a too long period of time cannot be demanded (four or five years seems to me to be the maximum that could be asked), it is indispensable to make an appropriate division between the theoretical and practical teaching. It can be seen by the data in my report to the Paris Congress, quoted by Dr. Arkövy and erroneously attributed to my friend, Dr. Godon, that in the majority of dental schools the number of hours devoted to theory is considerably inferior to those devoted to practical work.

Nevertheless, Dr. Arkövy and myself differ altogether with regard to the division of time. In order to oppose the propositions that I have furnished he has calculated the number of hours devoted in the European universities to medical studies. He found in the University of Budapest (and the same is the case for the other universities) that in five years the number of hours devoted to study amounted in 8632, and that of these 5002 are devoted to theory and 3630 to practice. He then says, "Hence, for many centuries the physicians have been badly educated!—for, contrary to what takes place in the dental schools, they have devoted more time to the theoretical studies." But Dr. Arkövy forgets just one thing, and this is that the object of the medical schools is to make physicians, and that medicine is a profession which requires the minimum amount of manual skill. If the medical schools, on the contrary, had only to educate surgeons, they would have to modify those plans by giving a greater amount of importance to the practical subjects. This is what is done in the case of those medical students who in the future will take up surgery exclusively. They devote more time (than do those who will take up medicine) to anatomical work and to operative medicine, and this with the object

of increasing their manual skill. I do not want to prolong the discussion, but I think that the principle should be established that dentistry is undoubtedly a scientific profession and also a handicraft, and we need not feel ashamed of it, as does Dr. Arköw. Hence, if it is a handicraft, it requires, as any other trade, a prolonged apprenticeship of the hand and eye, and in order not to prolong the period of study the greatest part of this should be devoted to the practical studies.

It is understood that theory should not be neglected before beginning and during the practical studies, but then the practical subjects should never be neglected, for without it good dental therapeutics (the final purpose of odontology) is not possible.

Dr. Godon.—The discussion demands that the commission should not study those points which bring about controversy, but those questions upon which it is easy to agree, and particularly the programme of dental education. For this purpose it would be advisable to take up the five points as brought forward by Dr. Sauvez in his report. These points were as follows: (1) Preliminary education. (2) Duration of the course and the order in which the different subjects shall be taken up. (3) Programme of the scientific and medical education. (4) Programme of the technical teaching. (5) Qualification and diploma.

He would propose the appointment of five members for the separate study of every one of these questions, the individual reports to be presented at the next session of the commission in 1902. He made a motion to the effect that the members be appointed at the next meeting at Cambridge. Carried.

Dr. Brophy asked how many countries are represented in the Federation, and was told that sixteen countries were represented and that twelve had sent delegates.

Dr. Brophy expressed a desire that there might be representatives of all countries and schools. He said that he regretted the absence of English members in the commission.

Dr. Godon explained that Dr. Cunningham and Dr. Paterson are members of the commission representing England, but that the latter, on account of his position of secretary of the British Dental Association, had not been able to attend the meetings regularly, and that it was not possible to make an official invitation to the British Dental Association on account of difficulties met with in the organization of the new branches.

He then said that all the members would now agree in asking President Brophy to inform the British Dental Association at this afternoon's meeting of what has been done up to the present, to excuse the commission for not having addressed an official invitation to the British Dental Association, the commission being unable to do so on account of not being completely organized, and to invite the members of that Association to take part in our future meetings.

It was decided to hold the next meeting in Cambridge August 7, at eleven A.M.

Cambridge, August 7, 1901.

The meeting was called to order at Trinity College Hall, Cambridge, at eleven A.M. by President Brophy.

The following members were present: Drs. Brophy, Godon, Bryan, Pearson, Queudot, Viau, Aguilar, Kirk, Grevers, Zsigmondy, Weiser, Frank, Quartermann, Baruch, Hesse, Huet, Harlan, Paterson, Rosenthal, Sauvez, Harlan, and Roy. The following were absent: Drs. Förberg and Cunningham.

Dr. Roy, the secretary, read the report of the previous meeting, which was accepted after some remarks by Drs. Aguilar and Zsigmondy.

Dr. Sauvez announced that the committee of the International Dental Federation had appointed Dr. Pearson adjunct member for the present meeting.

Dr. Godon announced that two new propositions had been received from Dr. Sauvez and one from Dr. Roy.

Dr. Sauvez's proposition reads as follows:

The delegates of each country represented will be requested to prepare for next year's meeting a *résumé* of a few pages describing without any commentary the dental legislation and education of their respective countries.

The Commission would print these reports.

In the case of countries being represented by more than one delegate the member who should write the report would be appointed by the various delegates.

After a few remarks by Drs. Aguilar, Quartermann, Paterson, and Roy this proposition was adopted.

Dr. Roy's proposition reads as follows:

The Commission shall appoint a member to study the conditions of affiliation of all the schools to the International Dental Federa-

tion, and also the means of bringing about such affiliation, so that the Commission shall be in a position next year to adopt appropriate resolutions.

Dr. Godon said that this proposition was embodied in Dr. Spaulding's motion to the International Dental Congress, and proposed that the two propositions shall be combined in one.

Dr. Rosenthal then read Dr. Spaulding's proposition, and both propositions were adopted. Dr. Rosenthal was appointed to study and report upon these subjects.

Dr. Brophy announced that members would now be appointed to report upon the following questions proposed by Dr. Sauvez:

1. Preliminary education.
2. Time, duration, and order of studies.
3. Programme of the scientific and medical education.
4. Programme of the technical education.
5. Qualification and diploma.

Dr. Aguilar said that he was surprised to observe that his propositions had been totally ignored.

After a discussion in which Drs. Godon, Hesse, Sauvez, and Brophy took part, it was decided to take up Dr. Aguilar's proposition as the basis of the discussion.

Dr. Aguilar then read his first proposition:

That a member be appointed to report and present resolutions next year upon each of the following questions:

(1) What should be the preliminary requirements for admission into dental schools?

Dr. Godon proposed to suppress the words dental schools, which might awaken prejudices.

Dr. Rosenthal also made some remarks with regard to the changing of the wording of this proposition.

After a discussion in which Drs. Godon, Grevers, Paterson, Rosenthal, Hesse, and Aguilar took part, the proposition after some changes in its wording was adopted.

Dr. Aguilar then read his second proposition:

(2) What are the theoretical and new studies that the student should have concluded before being admitted to the practice of dentistry?

Dr. Sauvez proposed to divide the proposition into three parts:

1. Theoretical, scientific, and medical studies.
2. Theoretico-technical studies.

3. Practical studies.

Dr. Godon proposed only two divisions:

1. Scientific and medical studies.

2. Technical studies.

Drs. Weiser, Rosenthal, and Hesse asked that Dr. Sauvez's second proposition referring to the time, duration, and order of studies be the one to be adopted, as it is clearer and more precise.

Dr. Rosenthal proposed the following wording, which was endorsed by Dr. Aguilar:

(2) What shall be the composition, duration, and order of the subjects of the programme of dental studies?

The proposition as thus stated was adopted.

Dr. Aguilar read his third proposition:

(3) What part of the studies which are taught in the medical schools shall be followed by the dentist?

Dr. Kirk proposed to modify the proposition so that it might read as follows:

(3) What part of the studies such as are taught in the schools of medicine shall be followed by the dental student?

Dr. Brophy said that the term medicine is too general, and that it should be specified what part of anatomy and therapeutics should be taught to the dentist.

After observations by Dr. Grevers, Roy, Godon, Rosenthal, and Paterson, Dr. Aguilar's third proposition as modified by Dr. Kirk was then adopted.

Dr. Aguilar then read his fourth proposition:

(4) Which is the best title to be given to persons practising the therapeutics and the prosthetic treatment of the diseases of the mouth and teeth?

Dr. Hesse proposed not to consider this proposition, which seemed to him to be altogether out of place.

Dr. Roy proposed to add another proposition to those already adopted:

What shall be the composition of the boards that accord the right to practise?

This proposition was not adopted.

Dr. Rosenthal presented in the name of Dr. Bryan the following proposition:

That a commission be appointed to study the means of educating the public upon dental matters.

Dr. Godon was of the opinion that this proposition should be submitted to the Executive Council of the International Dental Federation in the same way as Dr. Cunningham's proposition was sent to that body.

Dr. Sauvez, in order to give some consideration to the proposition presented by Dr. Paterson at the beginning of the discussion and in order to simplify the work of the Commission, made the following proposition:

Each member of the Commission of Education is requested to make a report upon the questions that have been referred to as far as it touches upon his own country.

Such report is a personal one and is not binding upon the countries represented. It should be addressed before March 1, 1902 to the secretary of the Commission who is in charge of the printing of the reports which are at that time to be addressed to each member.

This proposition was adopted.

Dr. Aguilar remarked that in view of the expenses which the work of the Commission would involve for the publication of the transactions, he would make the following proposition:

A voluntary subscription is opened between the different members of this Commission and the societies represented, so as to collect the necessary funds for the publication of the transactions of this meeting and of those that may take place later on.

Carried.

Dr. Aguilar also proposed:

That all the propositions to the Commission must be presented in writing before they can be taken up for consideration.

Carried.

Dr. Godon made a motion with regard to the extension of the powers of the present officers to the next meeting in Stockholm which was carried.

The International Commission of Education then adjourned.—
Dental Cosmos.

Editorial.

PROFESSIONAL EDUCATION: A CRITICISM.

THE subject of professional training, and especially preliminary education, has claimed the serious attention of many in this country, and has become an important topic for discussion in the older civilizations, if we may judge by the recent publications of the proceedings of the International Dental Federation recently held in England. The discussion there was mainly confined to the professional side, and only included incidentally the question of preliminary training. That the extended consideration of the subject in all its aspects is bound to prove of great value needs no argument, being a self-evident fact. The wider the knowledge contributed of the methods of education in force in various countries, the closer will be the approximation to a harmonious development everywhere, resulting in the establishment of an educational equilibrium not only in general training, but in our own specialty, modifying and improving the dental curricula of all countries. That this will be speedily accomplished is not to be expected, nor would it be desirable. All radical changes are to be deprecated. It is possible also that there must always be a decided difference in methods, while it may equally be possible to reach the same result.

In this country it cannot be truthfully stated that a system of general education exists. We have our public school system, which varies with different States and in different localities in the same State. In some it is worthy the highest praise; in others it is not above a very ordinary standard. There is no such interchangeable system here as in Continental Europe, carried to great perfection in Germany, nor would such a system be possible covering the entire United States. It is, therefore, useless to expect uniformity of methods, and yet this wide diversity produces results nearly equal to the more systematic training. The criticism made frequently by foreigners who have had but a few weeks or months of observation are of no value. Their standard of observation is defective, inasmuch as they are unable to appreciate any method not in harmony with that to which they have been accustomed.

The object of this article is not so much to treat of education

as an entirety, or even to attempt to cover in part the subject so ably discussed by trained minds at home and abroad, but to call attention to some of the errors of statement and erroneous conclusions based upon defective premises in their line of argument.

It is unfortunate that many of those who attempt the discussion of this topic are, by training, one-sided men, some viewing from the purely scholastic side, others from that conjoined with the medical, and still others unite these and add a third, the dental. It is, perhaps, impossible to erect a platform upon which all of these elements can harmoniously stand. Time alone can effect change from this chaotic mental condition; and it would, perhaps, be a waste of energy to continue the discussion, were it not for the fact that all mental energy is equally valuable in the individual and in the mass, resolving complexity into simplicity and antagonism into harmony, thus bringing about stable views on all disputed subjects.

In the present number our readers will find an able treatise on this subject read before the American Academy of Dental Science in Boston, by Professor Macvane, of Harvard University. He very naturally views the subject from the stand-point of the scholar, but, while a professor of history, he has been unfortunate in this paper in some of his statements, and equally so as to some of his supposed facts.

It is difficult to understand the thoughts he wishes to convey in the following quotation: "Professional education . . . is a new one in the world." He certainly cannot mean by the word *new* that professional education is modern. It is possible he refers to medical college training as deserving that title, yet during the Arabic period in the history of medicine, A.D. 640, "students from all parts flocked to the academies." Perhaps he proposes to date professional education in this country from the founding of the Department of Medicine in the University of Pennsylvania, in 1765, or the organization of the Medical Department of King's College (now Columbia), New York, 1767, or of Harvard Department of Medicine in 1783. He does not, however, explain his meaning, and the reader is left in greater mental confusion by the following sentence: "Provision for professional training came later than the Civil War." From what has already been shown, professional training was of very respectable age in all the subjects of law, medicine and dentistry when the Civil War was opened at Fort Sumter.

The writer is unquestionably correct in his statement that "the demand for it [the reduction of the college course to three years] has come from some of the professional schools." This has been a natural demand to avoid extending the scholastic training beyond a certain age. Farther on he states that "young men do not get the proper degree of maturity for real university work until they get to be twenty-one years of age or so." This means, of course, that the student of medicine will have reached twenty-five before graduation in medicine, and adding another year of hospital work and an additional six to ten years spent in efforts to build up a practice, and the most active portion of the life has departed.

The essayist asks, "Is it not evidently of more importance to have well-trained men, citizens with trained minds, than to have the younger members of the professions very highly trained at the very moment of their entrance into the profession (practice)? Is not the young dentist bound, in any case, to be more or less of a journeyman for some years?" The reply to this is that it is certainly desirable to have well-trained minds, but where there might be a difference of opinion would be in the mental training which is best adapted for the cultivation of the mind. It must be self-evident that no one single line of study will effectually accomplish this object. If it be assumed that neither medical nor dental training has a part in such education, then the writer must perforce part company with the essayist. There may be different degrees of value in study, but all mental work that requires careful analysis is an educational force. The young dentist when he graduates is not supposed to be a journeyman. The aim of all dental education is to make him a well-rounded practitioner when he receives his diploma. He has had, in his three years of constant study and practice, all the possibilities to meet that will come to any advanced practitioner. He may lack, it is true, that maturity of thought that can only be acquired by a lifetime of practice. The college that would send out a mere journeyman to acquire skill through experimentation upon patients would deserve, and certainly would receive, merited censure.

It is with regret that the author of this paper has subjected himself to friendly criticism, but it is essential that one occupying his position should seek authoritative sources for his historical information. If we may judge from the subjoined quotation, this he has not done, for he writes: "Of your own dental schools, three

have no express admission requirements. Eighteen have pure grammar school subjects for entrance. Another eighteen seem to require about a first year in a high-school course. . . . Eleven others have requirements that would be covered by about two years of the ordinary high school courses, . . . and six of the best may be fairly said to require about three years of a high school course. In view of the fact that the regulations governing dental colleges in this country could have been readily discovered, it would seem that such errors of statement should not have been made. The essayist could have learned that the fifty-two dental colleges of this country, members of the National Association of Dental Faculties, are required, under rather severe penalties, to comply with the rules of said Association and to live up to the standard it has established. Any of the colleges may go beyond this requirement, but cannot go below. The entrance standard has been gradually raised from graduation at grammar schools to the present standard. The following rule, taken from the annual report of this body, meeting at Milwaukee, August, 1901, will, it is presumed, fully explain the position occupied by this organization:

"The minimum preliminary educational requirement of colleges of this Association, beginning with the session of 1902-1903, shall be a certificate of entrance into the third year of a high school or its equivalent. The preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

"Nothing in this rule shall be construed to interfere with colleges of this Association that are able to maintain a higher standard of preliminary education."

The writer has not made these criticisms in any captious spirit. He recognizes the difficulty an essayist must meet when he attempts an entrance to the domain of another and quite distinct calling, but this fact emphasizes the importance of a broad comprehension of all educational methods before attempting an analysis of any single effort.

It is hoped that the wide discussion given this very important subject will create an increased interest in dental educational work and result in an equalization of all the varying degrees of training the world over, so that eventually the young dentist everywhere will take rank, each with the other, no matter where educated, and at the same time hold a scholastic and professional position beyond criticism.

THE ARMY DENTIST.

"FROM the paper of the president of the Army Dental Board, published in the *Dental Digest* for November, it appears that twenty-seven of the posts have been filled and that three positions are vacant. We presume that the dental societies of this country will be glad to welcome the occupants of these posts to membership in the societies adjacent to the army posts. So far as Chicago is concerned, the membership has been proffered to Dr. W. C. Fischer, who is located at Fort Sheridan. We had hoped that all dental societies would receive the army dental surgeon as a member, as soon as he was appointed, with open arms. At the last meeting of the Chicago Dental Society a resolution was passed giving the dental surgeon at Fort Sheridan all the privileges of membership to Dr. Fischer, but not providing for his successor in case he was transferred to some other post. We think that the least a society can do is to extend the courtesy of membership to a dental surgeon without dues, as he is liable to be sent elsewhere on short notice, and it seems only fair that he should be received with open arms by his compeers.

"For some reason best known to the army of objectors this was denied at the late meeting of the leading local society of Chicago by the usual objectors to all forms of real courtesy."—*Dental Review*, December 15, 1901.

The foregoing, from the *Dental Review*, exhibits a very liberal spirit, and, probably, will receive general approbation; in fact, it has already been strongly endorsed by at least one of the influential dental journals.

It is not pleasant to feel forced to dissent from the opinions expressed, but the policy outlined for dental societies to pursue in their relations with the young contract dental surgeons of the army is certainly a vicious one, and, if adopted, will lead to mischievous results.

These young men should be above receiving membership in any society upon the terms mentioned. The argument used, that they are liable to be moved from place to place, has no force; indeed, it is one reason why they should not be made members. If moved to various localities, they will have eventually a string of associa-

tions attached to their names, and in which they have taken, probably, no part or contributed either in money or ideas.

If these young men were without means, as many other young men are when beginning professional life, it would be a reasonable charity to aid them; but these army dentists are well paid in point of salary, and are able to add to this by work in after hours. They are, therefore, abundantly able to pay the yearly dues, and when forced to move should resign.

In view, however, of the possibility of removal, the generous and very proper course would be for the society nearest their place of work to invite them to attend the meetings, with all the privileges of the floor. This is all that should be given or should be required.

There should be a protest raised against making these young men special pets of the dental profession, and against the effort made in certain quarters to infuse into their minds that because they are dental surgeons in the army they are thereby placed in a class one degree better than the young graduate still struggling for an income to meet the ever-increasing expense account.

It is a matter for regret that the president of the Army Dental Examining Board has publicly endorsed the opinion of the *Dental Review*. The true position of an officer in the service should be a dignified opposition to all pecuniary favors, no matter in what form they may be presented.

AWARD OF THE GROSS PRIZE OF ONE THOUSAND DOLLARS.

"THE Philadelphia Academy of Surgery, as trustees of the Samuel D. Gross Prize for original research in surgery, of one thousand dollars, have awarded this prize, after six years interval, to Dr. Robert H. M. Dawbarn, of New York City.

"The treatise which won the competition was entitled 'The Treatment of Certain Malignant Growths by Excision of both External Carotids.' Upon this topic Dr. Dawbarn has worked as opportunity served, for seven years past. The essay when published will contain the histories, with pathologists' report in each instance confirming diagnosis of malignancy, and specifying a variety, of forty carotid extirpations by the author himself, and

as many additional by about a dozen other surgeons. At least two of these are members of the Philadelphia Academy of Surgery.

"By the terms of Dr. Gross's bequest the prize essay must be published in book form and a copy thereof be deposited in the Samuel D. Gross Library of the Philadelphia Academy of Surgery."—*Journal of the American Medical Association*.

It is with unusual pleasure that the foregoing is given a prominent place in this journal. Dr. Dawbarn is an active member of The New York Institute of Stomatology, and has contributed largely to its very pronounced success as a dental organization. He is one of the few great surgeons who feel that much may be gained by a closer intimacy with dentists and their work. This broad conception is so unusual that it is worthy of special record.

The writer has long been familiar with Dr. Dawbarn's extended surgical experience, and it is not, therefore, surprising that he succeeded in securing the prize for original research in surgery. The congratulations of this journal are extended to him for his labor and the result.

DR. A. W. HARLAN RETIRES.

THE announcement that the editor of the *Dental Review* retires because the service is "not remunerative" will be received with general regret. Dr. Harlan has made the *Review* the leading dental publication in the middle West, and while it has not been prolific in editorial opinions, its influence has always been for an advanced professional standard.

Dr. C. N. Johnson succeeds to the editorial chair. The *Review* under his management will have no uncertain sound. He is recognized throughout the dental profession as a man having ideas and ready at all times to defend them. With this character, and previous editorial experience, he will give renewed life to the journal, and may we be permitted to express the hope that he will rise superior to the trade influences with which he is necessarily surrounded?

Bibliography.

PRINCIPLES AND PRACTICE OF OPERATIVE DENTISTRY. By J. Sayre Marshall, M.D. (Syr. Univ.), Dental Surgeon United States Army, President Army Examining Board for Dental Surgeons. J. B. Lippincott Company, Philadelphia and London, 1901.

This work, on the very important branch of operative dentistry is presented to practitioners of dental surgery by the author, and to use his own language, "it has been his endeavor so to present the subject-matter as to give the student a comprehensive view of the principles and practice of operative dentistry, arranged in a natural and orderly sequence. . . . The methods of constructing artificial crowns and bridge-work have not been included in this volume, because in the opinion of the author they properly belong to the department of prosthetic dentistry. The subject of orthodontia has also been excluded for the reason that this branch has assumed the proportions of a separate specialty."

There are forty-two chapters in the book, beginning with "Classification and Descriptive Anatomy of the Teeth" and closing with "Extraction of Teeth." Between these all the important subjects connected with what is known as operative dentistry are considered in detail.

The illustrations are profuse, consisting of seven plates and seven hundred and twenty-five illustrations. Many of these are exceptionally good, especially those photomicrographs, prepared by Dr. Vida A. Latham, of "normal and pathological dental tissues and of bacteriologic specimens." Others by Drs. Andrews, Miller, Williams, Vincentini, of Naples, Noyes, Cryer, and Mr. James S. Shearer make up a collection rarely found in any single book.

Excluding plastics and inlays, there are sixty-one pages devoted to preparation of cavities and filling teeth, or about one-tenth of the reading matter of the volume. This fact, if it have any importance, shows the gradual loss which this principal operation has undergone in the past fifty years,—not that it is undervalued at the present time, but that so much of the collateral sciences have been

added that it has taken, in the estimation of many, a subordinate place in the curriculum. This the writer must regard as an unfortunate conclusion. This is, however, the legitimate result of the advocacy of the medical degree in the practice of dentistry. The skilled men in the latter will eventually be superseded by the imperfectly trained.

The publishers have spared nothing to make this volume worthy the subject, and the author is to be commended for his effort to make a compilation covering the important points connected with the daily practice over the dental chair.

QUESTIONS AND ANSWERS. Embracing the Curriculum of the Dental Student, divided into Three Parts. By Ferdinand J. S. Gorgas, A.M., M.D., D.D.S., Author of "Dental Medicine," etc., Professor of the Principles of Dental Science, Oral Surgery, etc., in the University of Maryland, Dental Department, Baltimore. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia.

Whenever there is a want to be supplied some one steps in to meet the demand. The author doubtless recognized that the period was ripe for a carefully arranged book of questions and answers, and prepared the first edition, published in three thin volumes. This edition, numbering four thousand five hundred, has been practically exhausted, necessitating a thorough revision and enlargement. This the author has now completed in a large volume of five hundred and forty pages.

It is impossible to examine this book and not feel impressed with the industry of the author. To prepare a series of questions upon any given subject where the compiler is very familiar with the topic treated is a serious task, but when this is complicated with many subjects comprising the entire curricula of the schools, it becomes formidable. That the author has been measurably successful must be conceded, and the questions and answers are, upon the whole, satisfactory.

The first edition was planned upon the supposition that the various studies extended over three years, and he therefore divided his book into the supposed work of the Freshman, Junior, and Senior Years. This is carried out, in extended form, in this, the second edition. The method has some advantages, but as, probably, no dental school carries all the subjects of the curriculum through

three years, the plan will not prove satisfactory, and it would be better to abandon this arrangement in future editions.

In such a laborious task as this book represents it could not be expected that its teaching would harmonize with that of all dental colleges, and, therefore, such a book must necessarily be universally acceptable. A critical examination as to truth or error contained would be difficult and perhaps impossible, but the reviewer, in glancing through its pages has met with a few statements that will lead to erroneous teaching. The following are typical: It is somewhat surprising that a teacher of materia medica would recommend equal parts of aconite and iodine for the treatment of pericementitis. A close study of the properties of aconite and its relation to the function of the sensory nerve would have caused the author to hesitate in recommending this powerful paralyzing agent.

Again, in the use of chloride of zinc for obtunding sensitive dentine. There may be room for a difference of opinion here, but it is an established fact that the vitality of the pulp is endangered by its use.

The author's treatment of pulpless teeth by pyrozone will hardly be satisfactory to those who doubt the propriety of using an acid irritant in canals with dead pulps.

The author's idea of abrasion is certainly erroneous. He regards the wasting as peculiarly the result of mechanical effect. The fact that acids are a prominent factor is not regarded.

If the author anticipated that this book would be used as a text-book in dental colleges, it is feared he will be disappointed. That it has been used by a certain class is very evident from the large sale of the first edition. It is inconceivable that any teacher would adopt this in his class work.

Quiz teachers will find the book a present help, and to those of examiners it will solve many difficult problems. The student, however, who depends upon question and answer for his knowledge of any subject will suffer shipwreck eventually, for no study can be made part of the mental treasures by any such superficial pabulum.

If this volume be put to its legitimate use it will become of very great value, and for this it can be cordially recommended. The question, What is legitimate and what not? must be left to the individual, but in the reviewer's opinion the proper place is not in the hands of the student; neither should it be needed by a mem-

of the State Board, for when the latter requires this help he at once acknowledges his ignorance of the subject.

The work of the publisher is satisfactory in every respect.

Obituary.

RESOLUTIONS OF RESPECT TO DR. CHARLES S. INGLIS.

It is with much regret and sorrow that your Executive Committee, in making its report to you at this the first of our Fall meetings, should find it necessary to record the death of one of the members of this society, in the person of the late Dr. Charles S. Inglis, of Paterson.

In consequence of this sad bereavement, we would offer the following resolutions:

WHEREAS, It has pleased Almighty God, in His wise providence, to remove from our midst our beloved associate and fellow-member of this The Central Dental Association of Northern New Jersey; be it

Resolved, That we, the members of this society, do hereby publicly express our sympathy to the bereaved widow and loving helpmate of the deceased; and be it also

Resolved, That we lament our loss, since by the death of Dr. Inglis we have personally lost a very dear friend and associate, and the society one of its most promising and useful members; the State one of her favored sons, a professional man of rare attainments, dignified, discreet, brilliant, and attractive; and therefore be it further

Resolved, That the above preamble and resolutions be embodied in the minutes of this society, that a copy be transmitted to the widow, Mrs. Inglis, and also that a copy of the same be printed in the Paterson newspapers.

(Signed)

FRANK L. HINDLE,
Chairman,
P. G. VOEGTLEN,
J. S. VINSON,
F. EDSALL RILEY,
WM. E. TRUEX,
Executive Committee.

Domestic Correspondence.

PIANO WIRE CLAMPS.

NEW YORK, December 31, 1900.

TO THE EDITOR:

SIR,—I desire to send to you for publication an article, or rather item, concerning Piano Wire Clamps. These were first suggested by Dr. H. F. Harvey, of Cleveland, Ohio, in a paper read before the Ohio State Dental Society, and published in the *Dental Cosmos* for March, 1900. The profession owes Dr. Harvey a debt of gratitude for originating this useful appliance and then giving them without covering it with a patent, as is too common when an apparently new contrivance is introduced. It seems to me that this clamp has not received an amount of attention at all proportionate to its value.

If any one will take the requisite time to learn to make these clamps (the process is described in Dr. Harvey's paper), they will certainly be amply repaid. The ease with which they can be adjusted to teeth upon which any ordinary clamp will not stay when it is being put on, and the saving in time to the dentist and the annoyance to the patient are factors that make this instrument almost invaluable. Dr. F. L. Bogue has made one suggestion to the method of making them that facilitates the operation greatly. Where Dr. Harvey uses a matrix, filed from an old instrument to hold the two parts of the clamp together, Dr. Bogue simply winds tightly with ordinary brass or steel wire and then flows with soft solder over this.

In the office of Dr. J. Morgan Howe we take an impression of very difficult cases and make up a clamp especially for that type. In cases of partially erupted or conical shaped molars we have been able to hold the dam on with these clamps where no ordinary clamp would work.

Very truly,

HERBERT L. WHEELER.

12 WEST FORTY-SIXTH STREET.



R. W. Sarnes

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Original Communications.¹

SOME ACCOUNT OF THE WORK OF DR. MICHAELS.²

BY EDWARD C. KIRK, D.D.S., PHILADELPHIA.

WHILE in conversation with Dr. Truman to-day the thought was evolved that the members of the Academy might be interested in learning something about the work that Dr. Michaels has been carrying on for the past six years. Last year a paper was published in the INTERNATIONAL DENTAL JOURNAL, in which Dr. Michaels gave his views of the relation of the saliva to the production of erosion or chemical abrasion of the teeth, and made the remarkable statement that it was due to sulphocyanide of potassium. I had the opportunity a year ago of listening to his paper before the International Congress in Paris, and afterwards made a rather careful study of the paper upon sialo-semeiology, and I made up my mind that if the opportunity afforded I would take occasion to make personal investigation of his remarkable claims, for they are remarkable. Hitherto the saliva has been regarded simply as a fluid containing a ferment, ptyalin, capable of convert-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Remarks made before the Academy of Stomatology, October 22, 1901.

ing starch into maltose, also some salts, mucin, and water. This is to say, it is a fluid which has a certain digestive property, but is mainly useful for lubricating a bolus of food so that it may be comfortably swallowed. Dr. Michaels, as the result of his studies, takes an entirely different view of the question. Apart from its physiological function, he regards the saliva as affording the very best medium which we have for arriving at a conception of the status of nutrition. He says the saliva more accurately represents the composition of the blood than any of the other body fluids. Physicians have been investigating the urine with reference to normal nutrition and pathological conditions, but Dr. Michaels regards the urine as of secondary importance in this relation. He says that it is an excretion by a gland specialized for that character, and does not stand in such close physiological relationship to the blood-current as does the saliva. He holds that the saliva represents the blood-current more accurately, because it is a secretion from the blood, and that it may contain everything in the blood-stream which is crystallizable and therefore that it is dialyzable through a glandular structure. He says that the saliva is swallowed as it is secreted and passes through the nutritive cycle over and over again, and in performing this evolutionary process picks up the soluble materials in the blood-stream and presents them in solution.

I became interested in the matter, because, in the study of the diseases of the mouth, the theories held with reference to caries and the question of erosion of the teeth, as well as of the invasion of the soft tissues of the retentive apparatus by bacteria, it seemed to me that the whole atmosphere of dental pathology had become so beclouded with the bacteriological question that we could not see beyond it. We had gotten to the point where we were regarding every disease as produced by bacteriological influence, and had lost sight of the important fact that there were many cases in which, though bacteria were present, the same class of organisms that were exciters of diseased conditions, yet no pathological results occurred. There is something in the nutritional status of the individual, and that nutritional status being, of course, related to a condition dependent upon conversion of food in the organism, through the process of cell metabolism, into energy, tissue, and waste products, by which process there is produced somewhere along the line the nutrition the state which we call vitality or life. The question

internal vital resistance to disease invasion seems to be involved in the process of nutrition, and has a most important bearing on the predisposing causes of disease.

Dr. Michaels has found, and I think he has very clearly demonstrated, that the percentage and character of salts found in the saliva bear a distinct relation to the intensity of the disease. As the blood-current becomes loaded up with these crystallizable waste products of nutrition, there is an osmotic overflow into the saliva; therefore, the quantity of these contained salts is important evidence of the state of the blood, which in turn is dependent upon the nutritional status. He claims to be able to determine from an examination of the saliva and blood the disease or diathetic state. It seems from his researches that it is an extremely simple matter to be able to differentiate individuals into two large classes,—those whom he calls the “hyperacid” individuals, whose saliva contains acid calcium and sodium phosphates, and possibly urea or uric acid salts, in quantities which may be detected and determined by the microscope. These salts exist in what he calls the “hyperacid diathesis,” of which the rheumatic and gouty individuals are well-known examples. On the other hand, there is an opposite type which he calls the “hypo-acid individual,” whose condition is characterized by a different class of salts in the saliva. After a little practice one may, with great ease and readiness, recognize the two classes of salts, and so determine the diathetic states.

The technique of examination is extremely simple. A specimen of mixed saliva of all the glands is taken. The mouth is first rinsed with water, so as to remove the food particles; no attempt at sterilization is made. After a sufficient quantity—a dram or two—is collected, then, with a dropping-tube several drops are deposited on a white porcelain tablet and the saliva is rapidly put through a series of qualitative tests, in order to determine its general character. The first test is made with one of the ferric salts, usually ferric chloride, in ten per cent. solution, in which we get a reaction showing the sulphocyanide of potassium, if it be present. The intensity of the color determines, to a certain degree, the diathetic state. Dr. Michaels has found in the gouty individual of the hyperacid diathesis that the sulphocyanide tends to disappear, so if he finds a saliva not giving any or a weak reaction to ferric chloride, he begins to suspect that the individual is of a gouty type. If the individual is of a rheumatic character and

the amount of sulphocyanide is above normal, you get a more coloration. When we speak of being "above" or "below" normal, the normal standard is arrived at by making examination of saliva with respect to the sulphocyanide test in a number of individuals who are in normal health. So you obtain after a while a conception of the standard of coloration, and you can determine whether the coloration is too intense or wanting in intensity.

Another test that is made on the porcelain tablet is for the existence of ammonia or ammoniacal salts, and is done by Heller's reaction, which gives a characteristic brownish color if ammoniacal salts are present. They may or may not be present. Chlorides are determined by the addition of silver nitrate to a decinormal solution, using yellow potassium chromate as an indicator, which is a well-known test for chlorides in the laboratory. He makes a test for glycogen, the presence of which he regards as a measure of health in the individual. If it be present in the saliva, he says that individual is in good health. It is the material into which the proteid substances taken in as food are converted in an available form for assimilation, and its presence in the saliva indicates that the system has stored up a quantity more than sufficient for its needs. Its absence does not mean ill-health, but its presence is an indicator which has a strong bearing on the existing status of the nutrition.

The third test on the porcelain tablet is the reaction of saliva with reference to litmus paper. A great deal of light has been thrown on the question of salivary reaction by the work of Dr. Michaels. It is put down in the text-books as being alkaline or neutral. It may be strongly acid, alkaline, or neutral, or may be both alkaline and acid,—i.e., amphoteric. That is to say, where the saliva contains disodium phosphate, and where it also contains the acid sodium phosphate or acid calcium phosphate, one may find in the same saliva a reaction to either blue or red litmus paper. The same condition is found in urine. So the acidity or alkalinity is to be expressed in terms of the proportions of sodium phosphate or acid calcium phosphate present.

Dr. Michaels lays a great deal of stress upon the modification which various kinds of saliva undergo decomposition. I saw a collection of all ages that he has kept for weeks, months, and even years, and these salivas were decomposed in various ways. Salivas from patients affected with some derangement of the liver decompose

with a dark brownish or greenish coloration. In the hyperacid cases, the rheumatic and diabetic cases, the color will be more of a reddish type, and these color results of decomposition form part of the history of the case which enables him to make up his diagnosis.

The most striking feature of his investigation is the microscopical study of the salts in the saliva after they have been crystallized. In all the works upon urinalysis and physiological chemistry that I have studied—and I have gone over most of the standard authors, both in English and in French—I have found no reference but one to the use of the polariscope in the study of these crystalline forms; though the study of the urine sediments and crystal forms is now elaborately worked out. Dr. Michaels has laid great stress upon the use of the polariscope in the study of these crystalline forms in the saliva. He differentiates those salts which are polarizable from those which are not, and thus makes a subclassification. He has found all the acid salts to be highly polarizable. The whole process seems to resolve itself into two things,—first, the study of crystalline forms in saliva, with a view to understanding its chemical composition; that is, by making an analysis of it by the microscope and chemically by the use of reagents. Secondly, to understand the pathological significance of these findings, whatever they may be. What does it mean when we find so much urea and acid calcium phosphates in the saliva? The bearing of such questions on diseased conditions is the final and most important problem.

I went so far with Dr. Michaels as to study his general methods, and it seems to me that I have got to a point where I am ready to begin the work. I have spent some months on it now. By beginning the work I mean seriously to take up the systematic study of salivas of a uniform line of cases of the same disease and to see if there is any common factor running through them, and to study those conditions as compared with normal conditions.

Dr. Michaels asserts positively that he is able to make a diagnosis of any well-known disorder by his method. The technique of making specimens is quite simple. He makes them in duplicate. A large drop of the saliva is deposited on a microscopical slide and covered with a round cover-glass. Alongside of that is placed an uncovered drop of saliva. One such slide is placed in a warm

chamber so that evaporation takes place at about 105° F. This gives him specimens for immediate study. The other is allowed to dry spontaneously at room temperature, being merely covered over with a bell-glass to prevent particles of dust from coming over it, and is then studied under a microscope. I have brought me to-night the microscope with a polariscopic attachment and some specimens which I should like to show to as many as care for them. I think you will agree that the appearances shown in these specimens of saliva taken from diseased individuals are, if not characteristic, at least strongly suggestive of that idea, and that it holds out the promise of great utility in the matter of diagnosis. I have in mind that the quantity of salts present seems to be related to the intensity of the disease, and not only enables us to say, "This man is of such a diathesis," but when the characteristic salts are present in small quantities we will not regard him as a very healthy man, but where the saliva is loaded down with them we have reason to suspect that the man is very ill; in the cases that I have studied thus far this fact seems to be borne out. If this investigation yields many of the results which it promises, I believe that we will have one of the most important means of diagnosis given to us in recent years. It furnishes us with a key that, after awhile, may provide the problem of caries from an entirely different view-point. The question is constantly being asked why it is that this or that particular theory does not fit a certain case. I have very great doubts as to whether the type of caries seen in the mouths of young children or adults, where approximal surfaces are attacked, is where the disease is running rampant, is the same as that found in the gouty or hyperacid type of individual, where it seems that an acid substance is exuded from the gum margin and where decalcification is girdling the tooth. Dr. Michaels finds that these different types of caries are related to diathetic states and to variations in the composition of the oral fluids, and that they have different causes. The nearer we get to an understanding of the original causes of this disease the better able will we be to prevent and cure it. I must say, with reference to my study with Dr. Michaels, that it was exceedingly gratifying and was one of the most hopeful things that I have met in dental pathology.

A PLEA FOR A SUB-SPECIALTY IN DENTISTRY.¹

BY C. M. WRIGHT, D.D.S., CINCINNATI, OHIO.

IN 1864 I read an essay before the Cincinnati Dental Society—the mother of our present Odontological Society of Cincinnati—on “Specialties in Dental Practice.” This was my first paper prepared for a dental meeting. At that time I could conceive of but two departments, the Mechanical and the Operative, and I offered arguments in favor of a division with all the optimistic assurance of youth.

About twenty-five years ago, in Basel, Switzerland, I mapped out a scheme for the practice of a new specialty of dentistry for a woman of education who applied to me for advice. She wished to earn a living, yet did not desire, or feel able, to enter into the full work of an accomplished Doctor of Dental Surgery. I then planned for her the kind of work which shall form the subject of my talk this evening. She did not follow my suggestions and fit herself for the specialty, because it was not feasible at that time and place, but this circumstance did not affect my opinion of the excellence of the idea.

The time has arrived when I believe we should make it possible for and encourage just such applicants to enlist in this field of useful service.

Ten years ago I explained the same scheme to another lady who sought advice about entering the profession of dentistry. This lady was convinced by my picturesque and enthusiastic advocacy of the “Specialty within a Specialty,” but as there appeared no opportunity for acquiring the education necessary for the practice of the vocation, she was compelled to abandon the plan. Soon after that she was enrolled as a student in a school of stenography, and now spends ten hours a day agitating a type-writer in a downtown business office.

The recent papers by Dr. D. D. Smith, of Philadelphia, on the prophylactic value of a certain dental operation,—viz., *the expert polishing of the human teeth*, beginning with the children, and having regular and frequent appointments and systematic attention in this one direction, and continuing it possibly throughout

¹ Read before the Odontological Society of Cincinnati, January 31, 1902.

life,—has appealed to me so forcibly that I have felt that suggestions on "A Sub-Specialty in Dentistry," devoted to the polishing of teeth and the massage of gums, might be apropos. I beg leave, then, to offer the following:

1. The practitioners of this separate and yet most important branch of dentistry are to be women,—women of education and refinement,—who are seeking a field for work of an honorable and useful kind and among people of culture.

2. The dental colleges are to offer opportunities for this particular and separate training. The course to consist of lectures on the Anatomy of the Teeth and Gums, Special Pathology, and Physiology, and a special clinical training in prophylactic therapeutics.

3. Upon the completion of this special course, which shall require one session, or one year of study, and practice under instruction in the college infirmary, and after presenting satisfactory evidence of proficiency in the polishing of teeth and caring for the mouth, the college shall grant a certificate of competence to the graduate of this course.

4. With this training and the dental college certificate, the ladies may be employed by dentists for this special work, or may practise the same at parlors of their own, or at the homes of patients, the dentists using their influence and recommending the new specialists, just as physicians and surgeons recommend and insist upon the services of the trained nurse or the masseuse.

This is but an outline of a scheme, the details of which seem easy of arrangement.

I think every one of you will agree with me that there could be no more valuable service in oral hygiene than just such a class of specialists would afford.

Dentists who treat pulps, fill teeth, make bridges, crowns, and plates, treat inflammation and Riggs's disease, extract teeth and roots, and construct and care for regulating appliances do not devote the proper attention to the careful polishing of all the surfaces of the thirty-two teeth, nor to the frequent massaging of the tissues which Drs. Smith, Talbot, and others advocate so strenuously essential to the health of the human mouth.

We, as a profession, have neglected these operations. We scrape off the calcareous and other accretions at long intervals, often imperfectly, or partially and hurriedly, and with wheels and brushes on our electric engines whisk off the most conspicuous stains.

leaving the teeth only comparatively presentable. We seldom perform the operation with satisfaction even to ourselves. Probably, in the light of the revelations made by Dr. Smith, the majority of us have never once in our lives thoroughly polished all the exposed surfaces of the teeth of our patients.

I think every one would be glad to have this work done by experts, fortnightly or monthly, for every patient who comes to us for so-called dental operations,—viz., for crowns, fillings, bridges, etc.,—and not only before coming, but at regular intervals afterwards, *especially in conjunction with our surgical treatment of Riggs's disease.*

I have claimed that teeth are a luxury, but *clean* teeth—and by this I mean teeth each one of which has been polished on every surface by a skilled operator until it presents a finish only rivalled by some fine jewel—should be a badge of refinement that would place the child, the man, and the woman on a certain social plane.

Polished teeth in this age of luxury, when the bath, the manicure, the chiropodist are considered necessities, should form a subtle reason for an aristocracy of cleanliness which is next to godliness. Our ideas of the term *clean* have changed during the last twenty years. Then a man was clean who took a Saturday-night bath, a monthly shampoo, and shaved himself three times a week. Now we talk about "surgical cleanliness," and know about infections on toothpicks, and even upon smooth-looking enamel.

As we advance in the adoption of luxuries, we get more particulars about daintiness, and this seems to be true in all things excepting with the teeth. I believe that it is largely due to us that this surgical cleanliness has not taken a more prominent place in the estimation of the general public. Our devotion to the diversified and exhausting mechanical operations which we are hourly called upon to perform, and on account of which we have gained reputation as a skilled and useful profession, has diverted our thoughts from what we call a minor operation.

Our energies, measuring as much per foot-pound as that of any other profession,—law, medicine, or theology,—have been fully expended on the many more brilliant operations in our surgical repertory, and we have neglected this one, which we all admit is as important as any in its relation to health. We have given ourselves over to restoration and been content to advise tooth-brushes, sanatol, or vegetol to our patients, leaving the responsibility of real

prophylaxis with them. We may not be able to change our mores and habits of practice, but we can, by this method and with the hearty co-operation of the dental colleges in affording the educational equipment necessary for the cultivation of this field of special practice, revolutionize dentistry—place it upon a still higher plane. The operation suggested is more directly in the line of preventive medicine, with all that this implies, than any other within the scope of prophylaxis that I can think of, such as boiled drinking-water, ventilation, sanitary plumbing, physical exercise, diet and bathing. Imagine a room full of children, as they are now in any school, public or private, in regard to surgically clean mouths and the same children after a thorough polishing of all their teeth. Here is an opportunity for missionary work. Enthusiasm on the part of operator and patient could easily be stimulated, and health and morals be vastly improved. Ten years of such effort on the part of our profession would do more for the human family than all the tooth-pastes and powders ever invented, or all the tracts the people ever published, for the responsibility would be removed from the patient and placed where it belongs,—on the practitioners of this art of oral hygiene, these sub-specialists.

We have set the men on pedestals who have been able to find out a carious spot on a tooth, extend and form a cavity so that a clean surface of gold may take the place of enamel and protect a part of a single tooth from a single disease; shall we not commend and honor the specialist who patiently and regularly operates for the prevention of this and other diseases by intelligent and systematic care of the entire mouth? This is a fundamental idea in dentistry, agreed to by all and yet neglected.

With our present exact knowledge of etiology and our increasing familiarity with the wide-reaching effects of oral sepsis, are we ready for the establishment and hearty endorsement of training specialists who will devote their entire time to this one branch of prevention? From personal observation among refined people in America and Europe, I believe success would follow the efforts of the colleges and the profession in this direction, for we shall be supplying an awakening demand for just such service.

DENTISTRY AS A VOCATION FOR PROFIT, ESPECIALLY IN NORTH CAROLINA.

BY DR. B. F. ARRINGTON, GOLDSBORO, N. C.

THE practice of dentistry is not as remunerative in North Carolina, and possibly in some other States, as it is generally supposed to be by a large majority of young men who select dentistry as a vocation for life study and service.

The time given and expenditure made in preparation requisite for the practice of dentistry with the majority of young men is unwisely appropriated, chiefly because so many, proportionately, are unsuited to professional life, and are better suited for many of the varied pursuits that present for their consideration, and from which larger gains could be obtained than from the practice of dentistry, especially that class of young men endowed with capacity to grasp and manipulate mechanical and business pursuits successfully.

The profession of dentistry as a profitable vocation has for some years past proved a decided failure in North Carolina. Owing to over-estimate, it is deceptive and allures to injury. The field is crowded, and the number of practitioners is increasing annually, greater than the demand justifies; consequently reduction of prices and curtailment of profits.

Many of the young men, captivated with the idea of preparing for the practice of dentistry, flattered with the prospect of professional life, are doubtless influenced and ruled principally by the supposition and conceived idea that there is easy life and big money in it, which is erroneous and seriously misleading, as many learn with sad regrets after years of practice with no bank account to draw upon to enable them to tide over comfortably in case of affliction and in old age.

The outlay in time and cash expenditure requisite in preparation and equipment for practice is greater now than some years back, and the full measure and status of educational requirements and expenditure is not yet definitely established, but it will in all probability be greater five years hence than at present, as there seems to be a growing disposition to make the term at dental colleges *four years instead of three*, and the State dental executive

boards seem to be drawing the cords tighter every year, as if in effort to make it appear that the professors in dental colleges (educators) are not equal to a creditable and faithful performance of the duties of their daily lifework in training and preparing young men for the practice of dentistry. Rather assumptive and presumptive.

At present it requires from three to four years preparation and a cash outlay of from eighteen hundred to two thousand five hundred dollars for readiness to begin practice on a moderately equipped basis. Then comes a realization of facts, with disappointment and discontent in not realizing from annual practice several thousand dollars, as is the false anticipation of the majority. A seven or eight hundred dollar cash practice (not net) is about the maximum figures with the majority for some years and with many during life practice. Truly a small amount, far short of anticipations, and is discouraging; but the presentation is correct, as many from sad experience in practice have learned and can attest.

There are now from three to four hundred practising dentists in North Carolina, who, as a whole, do not, I am sure, average an annual cash practice of one thousand dollars. Eight hundred would be a liberal estimate, possibly considerably in excess of average cash receipts. To say that there are not twenty dentists in the State whose average annual cash receipts from practice will not exceed two thousand five hundred dollars would not be underestimating. This makes quite a poor showing in a pecuniary point of view for a professional vocation that costs so much expenditure in preparation to commence practice. It is possible that a decade hence the discouraging features will be proportionately greater. The number of practitioners in the field will have increased largely, there will be more "dental parlors" of the "cheap John," underrating type open and bidding for patronage at low figures, and prices will be diminished below the level and range of an equitable and legitimate charge for skilful and meritorious service, a state of things possible and to be regretted, but inevitable unless there shall be wise management and successful legislation to prevent.

With the state of things existing as above stated, correct beyond questioning, the question may be asked, Wherein have the State dental executive boards in any way benefited the public, "the dea-

people" for whom they profess to feel such deep concern, elevated the profession, or in the slightest degree improved the practice of dentistry? No one can recognize beneficial results from their labors, and all must feel that if the executive boards are not the cause of the weakened and weakening state of the profession, they certainly have not proved a preventive, therefore are useless and not further needed, and will, if continued, from this on tend to evil more than good, as the tendency of their existence will be to weaken and lower the importance and dignity of the profession in the general estimation of the public not only in North Carolina, but in other States, by creating false impressions relative to instruction and work in dental colleges.

Whenever we ignore the professional ability, the high status of attainment, and the able work performed by dental college professors in the discharge of their faithful lifework in educating and preparing young men for the practice of dentistry, and educate the public, as dental executive boards are doing, to regard the work in college on the line of instruction and preparation defective and a failure to the extent that State executive boards are requisite to pass upon and correct it, the whole fabric weakens in public estimation and must fail of right appreciation and usefulness.

When rightly considered and thoroughly analyzed as an organized protection for the public, and for professional uplifting and superior excellence and advancement, the whole thing (executive boards) presents an amusing and farcical aspect, and evidences most decidedly a weak feature in professional work. Like other crazes, it will have its run and may die of its own weakness and need of props to sustain.

We have good men of the profession on the State executive board in North Carolina (as it is we will hope in other States), but they are not superior in educational advantages, professional attainments, and practical skill to many dentists practising in the State. To credit them with ability and attainments equal to and superior to that of faculties in dental colleges to examine and pass upon the merits and qualifications of aspirants for practice would be erroneous and absurd in the extreme. Let the boasted pretensions be what they may, there is no such advanced attainments in the ranks of the profession in North Carolina at present, and possibly never will be.

Considering the many and varied avenues of industry and creditable pursuits now open and presenting to young men in all sections of our country, it is surprising that so many (some utterly unsuited) take to and embark in the practice of dentistry when promises such poor compensation, knowing, too, that after expenditure of time and money, outfit procured, and diploma in hand they must then confront the State executive boards and submit to the trying ordeal (legal, but useless) of testing the competence and work of dental college faculties, and to determine if a gracious permit in the shape of a license to practice shall be granted. Thoughtless, reckless, and unwise.

Young men giving thought and study to the subject of dentistry, with a view to practising in North Carolina, are admonished to consider and investigate carefully before deciding to embark in a line of lifework that may prove disappointing and produce fruit more bitter than sweet, as has been the experience of many who were easily deceived and tempted to embark hastily and without due reflection, as many are now doing, and to regret at leisure after years that they had not more wisely measured and counted cost, and appropriated means, talent, and energy in a different direction, for the good of self and of State and country.

We have at present fifty or more dental colleges, variously located from Maine to Texas. Unquestionably too many for the credit of the profession and good of the public. If all could be closed but a dozen or so of the best type, with true stamp of excellence, for the next ten years, to meet the requisite demands only it would be better for the profession and the people. Abuse and injury often comes from overcrowding. There is such a thing as surfeiting with too much of a good thing, as is evidenced in the rapid increase of dental colleges and the number of graduates annually turned out. The supply, such as it is, in some instances is vastly greater than the demand, consequently it works evil to the profession and evil to the public. When we have learned to demonstrate and practise more appreciation of quality than quantity a better state of things will exist. There will be fewer dental colleges, but better colleges as a whole, fewer annual graduates proportionately, but of better type and more thoroughly prepared to commence practice without State check or hinderance. Dental executive boards and dental parlors, one about as much needed as the other and both hurtful to the best interests of the profession, would

soon vanish, and be recollected only as things of the past. The future of dentistry as a profession will be more promising, the public will be better served and compensation for service rendered will be more generous and universally liberal and satisfactory, and the temptation, for many reasons, will be more inviting and encouraging to study and prepare for the practise of dentistry than at the present time.

It may be a decade or several decades before the desired and needed benefits through reform can be effected, but it is only a question of reasonable time if right action and harmonious effort on the part of all who should feel interested for the change shall be persevered in. In the mean time there are and will be many opportunities and broad fields of labor presented for the choice and free exercise of brain and muscle of ambitious young men that had better look to other pursuits (more profitable) to which they are by nature and cultivation better suited than the practice of dentistry. Such are established, candid convictions after watchful observance of the progress and retrogression of dentistry, with varying features of change, favorable and unfavorable in theory and practice, for a period of many years, more than half a century.

Reviews of Dental Literature.

THE PRACTICAL VALUE OF PORCELAIN AS A FILLING-MATERIAL.

By Alfr. Körbitz, Berlin.¹

The æsthetic value of porcelain fillings is commonly admitted. There are, however, other points to be considered. One of these is that the practice of "extension for prevention" can better be carried out by the use of porcelain fillings than by the use of gold or any of the plastics. This is possible because the loss of substance resulting from the free cutting away of the walls of the cavity is readily supplied by a material which closely resembles tooth-substance, and makes its loss unobserved. As to the durability of

¹ Der praktische Werth des Porzellans als Füllungsmaterial, von Alfr. Körbitz, Zahnarzt in Berlin. Deutsche Monatsschrift für Zahnheilkunde, 14. Dezember, 1901.

porcelain fillings, the author has these important words to "A porcelain filling holds so long as it preserves the tooth. filling falls out when it no longer serves its purpose, its importance as a preservative filling is so much heightened. If all gold, amalgam, and cement fillings, about which secondary caries exists, would fall out, the affected teeth would be better served than their remaining hanging in undercuts and protecting and concealing the carious area. Porcelain fillings must, on account of the way in which they are inserted, soon lose their hold when secondary decay penetrates the depths of the cavity. The line of cement which exists about a well-executed porcelain filling is not, in the case of normally formed teeth, a place of less resistance, since the edges of enamel which may be exposed by the dissolving of cement are as capable of withstanding caries as the smooth superficial surfaces of the teeth. It is worthy of notice that the ability of cement under these circumstances to resist deterioration has given rise to many attempts at an explanation.

The author concludes that, from the evidence already at hand, the fact is established that porcelain fillings stand high as servers of tooth-substance.

That porcelain fillings sometimes fall out prematurely cannot, however, be denied. And the reasons for this are given as follows: 1. A faulty execution of the work as regards depth of cavity, filling the margin, undercut, consistency of cement, or articulation. An unfavorable reaction of the fluids of the mouth.

As to what cavities are suitable for porcelain fillings, the author quotes Professor Miller, as follows: "Porcelain fillings can be used in all places where a good impression can be made."

A practical consideration of the preparation of cavities follows, for on this depends the success or failure of the filling. The general shape of the cavity is that of a trough with steep walls which broaden outward in a funnel-shaped way. The taking of the impression is stated as the most difficult part of the work. The author uses Williams's rolled gold No. 30 for the matrix, and says that in the unheated state it takes the best impression, but is also in that state less liable to resist change of form in removal. By heat the elasticity of the gold is increased, and it holds more tenaciously to a given form, but it is also less pliable.

In regard to instruments, the author recommends a pair of pliers much heavier than the ordinary foil-pliers, and one hav-

each point finished with a half-sphere piece of metal. The two half-spheres come together on their flat surfaces with the closing of the pliers. With this form of pliers a piece of cotton or other material can be forced against the matrix with the minimum danger of tearing it. Chamois-skin leather and sponge are recommended for pressing the gold matrix into place.

There are three mistakes which can be made in the taking of the impression. First, the piece of foil can be so large as to overlap the cavity to such an extent as to make the withdrawing of the matrix difficult or impossible. Second, the endeavor can be made to take an exact impression of the bottom of the cavity. This is undesirable, for a certain amount of room is needed in the bottom of the cavity for cement; moreover, the bottom of the cavity is often rough and likely to hinder the withdrawing of the matrix if closely fitting it. Third, the use of ball-burnishers to burnish the gold against the walls of the cavity.

WILLIAM H. POTTER.

Reports of Society Meetings.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology was held at the rooms of the Academy, 1731 Chestnut Street, on the evening of Tuesday, October 22, 1901, the President, Dr. S. B. Luckie, in the chair.

Dr. James Truman.—Dr. Kirk, during the past summer, spent some time with Dr. Michaels in Paris, examining his investigations on saliva. I understand that Dr. Kirk is ready this evening to show some of the results, and I would move that he be requested to give his experience in Paris during that period.

During a recess Dr. Kirk gave a practical demonstration of the workings of the polariscope and microscope in connection with the specimens of saliva presented representing various diseased conditions.

(For Dr. Kirk's remarks, see page 229.)

DISCUSSION.

The President.—You have heard Dr. Kirk's remarks on the interesting work of Dr. Michaels. The subject is now open for discussion.

Dr. Inglis.—I have listened with a great deal of interest to Dr. Kirk's remarks, and it is quite evident that Dr. Michaels has been doing some valuable work. The peculiar value evidently lies in the possibilities of saliva as a diagnostic medium which is easily obtainable at all times. The broad view of these possibilities of course transcend all local considerations, and if realized would make Dr. Michaels a benefactor to the world. I must confess that when I read Dr. Michaels's paper on "The Rôle of Systemic Hypoacidity in Dental Erosion" I was a trifle disappointed, for several reasons. In the first place, Dr. Michaels, if I recollect properly, failed to write of the more important theories which had been advanced. The acid sodium phosphate theory was not mentioned at all. I tried the experiment of trickling a solution of potassium sulphocyanide over a tooth, as Dr. Michaels did, and could obtain no results whatever. I would like to ask Dr. Kirk what he has found relative to the question. It is quite possible that my technique was faulty, but I was unable to get the erosions from the experiment.

I would like to ask Dr. Kirk if Dr. Michaels related the connection of salts in the blood with the excessive deposits of calculus in the mouth. Probably he did, and I would simply like Dr. Kirk, if he can, to give any information on that point. Both of these points in connection with the erosions and excessive deposits of calculus are very interesting. For example, I had a patient who was of the tall, thin, narrow-hipped variety, very much nervous, and exhausted by school work, a single woman about fifty, and evidently suffering from some form of malnutrition. Her physician told her that she had gout. That woman had excessive deposits of salivary calculus on the teeth. I would cleanse them, and in two weeks she would return with nearly as much calculus as before, so that local treatment offered little encouragement. I would like Dr. Kirk to bring out these two practical points. I do not insist on my own experiment as being any proof.

Dr. Kirk.—I hesitate very much to attempt an answer to these interesting questions. They are very much to the point. The inquiries that I made of Dr. Michaels myself, and I do not know how to answer them, because of the very short time I was able to

to the work, and because of the immense extent of the subject and the innumerable experiments that Dr. Michaels has been making it was quite impossible for me to get any more than a very hasty general view of the subject during the two weeks I spent with him, although I was there continuously night and day. I raised the very question that Dr. Inglis has raised with Dr. Michaels, as to whether he intended to say that the sulphocyanides, either ammonium or potassium, exerted a solvent action on the tooth-structure. The impression I gained from his explanation was not that the sulphocyanide *per se* was the solvent involved, but its existence, in greater or less proportions, was an index of the nutritional state under which the erosion took place. He felt that his article had either not fully expressed his meaning, or that it was not understood. He was astonished that that view should be taken of it, but when I confronted him with the statement that that was the only reasonable deduction from his paper, that that was the view that was held, he expressed great surprise, and I believe was on the point of preparing an essay more clearly expressing his meaning. He regarded the sulphocyanide as merely an index of the condition of the saliva, not that the sulphocyanide itself did not have a solvent action. As to the rapid formation of calculary deposits, Dr. Michaels has found that under certain conditions of nutrition, particularly in the case of excessive work and in the gouty diathesis, there is a tendency to a loss from the system of a large quantity of phosphates. That goes on for a certain time until the body, or the whole economy, as he expresses it, becomes "demineralized." There is a loss of phosphoric acid. After that has reached a certain stage, the character of the excretion changes. Instead of having a large quantity of phosphates, we find oxalates present, or there may be an excess of hydrochloric acid. I do not feel warranted in speaking with a high degree of certainty or precision in the matter, for my time was wholly taken up in the study of the saliva and the technic of examination. I had hoped to do some work on cancer. Dr. Michaels claims to be able, from specimens of the saliva, blood, and urine, to make a positive diagnosis of cancer or sarcoma. There is no doubt in his mind that the cancer blood is diagnostic, and, in connection with the urine, the saliva enables him to make a positive test. That is a very important thing, and I was hoping to pursue the subject further, but my time was limited, so that I could not go deeply into it.

Dr. James Truman.—In compliance, Mr. President, with request to speak, I may say I do not feel that I know anything about the subject. It is one that requires to be worked up with the expenditure of a great deal of time. I am very glad that Dr. Kirk has taken it up, and has been able to give us a very satisfactory talk this evening. I was very anxious to hear his account, and that is why I made the motion. We all want to know, I think, something more about saliva than we have been familiar with in the past. To me it has been an enigma. I am glad that Dr. Michaels has thrown upon it, so far as he has been able, a light that Dr. Michaels has thrown upon it, so far as he has been able. It has been very satisfactory. I have no criticisms to make.

Dr. Kirk.—Let me say that Dr. Michaels is an American, which fact I am glad. It always stirs up my national pride. I feel that work is being done by Americans on the other side of the water. He wants his *confrères* to have a good understanding of what he is doing. He was led to study this matter from the fact of the inability of the physicians whom he consulted to tell him of a condition of malnutrition from which he suffered many years. This led him to study his saliva, and he was astonished to find these appearances under the microscope. Then he studied it systematically, read all he could on the subject, and studied physiological chemistry of saliva and the chemistry of nutrition. He obtained saliva from cases in the hospital, and found a common factor running through certain groups of diseases. He regards his work, even though he has done a great deal of it, merely as an entering wedge to further work which he hopes to do. It is a great pleasure to testify to his spirit in this work. It is the type of the type that is exclusive. He is not trying to do this for himself, and his office and time are at the command of any one who will express an interest in it. He says,—

"Is there anybody in America who will be interested in this? If you will only tell me the name of any one who is interested in studying this work, I will put as much time as necessary into answering letters, expounding the subject or putting it in a shape that my colleagues can utilize the information."

I am myself fitting up a laboratory for the study of saliva and I shall be very glad to get samples of saliva of any case of interest, with or without the history, and I shall be glad to make any investigations or aid others in doing this thing. It seems to me that it is a field that we, as dentists, should promptly occupy.

and develop. I think it has a distinct bearing upon the questions of erosion, pyorrhœa, and the etiology of dental caries, and, more than all, has a bearing on the question of immunity from these disorders. I shall be glad if the little beginning which has been made will be the entering wedge for some very important work.

The President.—If there are no further remarks, incidents of practice are in order.

Dr. Inglis.—Supposing that incidents of practice were to invite your attention this evening, I brought down a few specimens which, unless I am wrong, establish a new classification in tooth-fusions. In the "American Text-Book of Operative Dentistry," in Dr. Thompson's chapter upon the "Macroscopic Anatomy of the Human Teeth," there is illustrated a fusion of the third and fourth molars. I have several specimens here—one occurred in my own practice—of third molars with a fourth molar attached. These teeth are united by a true fusion of the roots only. In all previous cases of fusion I believe they are described as being attached by crowns or by crown and root. In both specimens the crowns and part of each root have been fully developed, and later during the process of development the root-pulps have fused, and from that point a common root and root-canal with one foramen have been developed. In one case the fusion with the supernumerary molar has occurred by one buccal root only, the other roots having developed as usual.

I would also report a case of arsenical necrosis. I had occasion this summer to devitalize an incisor in order to crown. I drilled from the disto-labial aspect, because of the presence of a gutta-percha filling and because there was a great deal of secondary dentine in the canal. The tooth was not in its usual axis, and the root was small, so as I drilled through the dentine I missed the canal by a short distance and perforated the side. This was done by a spear-drill, so that the perforation was slight. I supposed I had entered the pulp, and I made a small arsenical application. In the course of some days the patient returned. I found a white bleb upon the surface of the gum, about midway over the mesial surface of the root. I removed the arsenic and filled the perforation with gutta-percha, then lanced the bleb, and a certain amount of watery fluid was exuded. I syringed it out with a solution of iodine, and allowed the patient to go. Suppuration ensued. The patient was then furnished a syringe and a solution of iodine for

the purpose of counteracting any possible presence of arsenic for the purpose of stimulating and sterilizing the part. The case was brought through until this month, and in time all tissue has been regenerated; the tooth is firm, and now bears a crown. It is one of the cases which shows the self-limiting action of arsenic, and in which the tissue has regenerated after destruction by arsenic. Some three years ago I reported a case in the Academy where catheter phoresis had been applied after an application of arsenic and arsenic was forced through the apical foramen. In that case the tissue was devitalized and an ischæmic necrosis supervened with subsequent regeneration of tissue.

Adjourned.

OTTO E. INGLIS, D.D.S.,
Editor Academy of Stomatology

MASSACHUSETTS DENTAL SOCIETY.

THE thirty-seventh annual meeting of the Massachusetts Dental Society convened at the Massachusetts Institute of Technology, Boston, Mass., on Wednesday, June 5, 1901, and continued on the 6th and 7th. The President, Dr. John F. Dowsley, occupied the chair and called the meeting to order. Following is a part of the proceedings of the sessions.

Dr. Andrew J. Flanagan.—The committee extended to me the invitation to read a paper before this meeting, perhaps a ten-minute paper, and that the one thought predominant in it might be of some theoretical interest but also of practical interest. With this thought in view, I have prepared a paper, and shall ask for about ten minutes of your time this afternoon.

TRUE PROFESSIONAL LIFE A FINE ART.

BY DR. ANDREW J. FLANAGAN, SPRINGFIELD, MASS.

This may be said to be the epoch in dentistry of what might be termed "higher education;" accepting this as a fact, we are situated in a race which seems to pervade all life and thought, therefore in apace with the general world's activity and advancement. The tireless activity on the part of man may truly be said to be the source of all good. The pessimists have said it was the source

all evil. Be that as it may, the moral philosopher may well ask, Has the higher life kept apace with the higher education, or is the higher life a thing of the past in this the strenuous age? Let me state in the beginning that the word professional is used in its broadest sense, and that art to me signifies the application or use of knowledge and skill to that which we will term the immaterial and beautiful, a something beyond the worldly.

The essayist has been for seven years an observer and participant in many dental meetings, and naturally has had an insight into dentistry through the individual membership; it is perhaps best to say at once that the ideas gained were of a varied and interesting nature—from my point of view. If I have heard and understood aright, our calling could be said to be divided into two great camps, the practical and the ideal, or, as the other fellow says, the impractical; searching for a true understanding of their meaning has brought forth this: the practical means it is the easiest way and has the best financial returns to himself; the ideal is the sum total of all that is opposed to this. The very practical man is likely to be the fellow that says, "I am not in dentistry for my health." You have all seen him and, above all, heard him. We have men who believe in the usefulness and mission of the various schools, colleges, dental laws, boards of examiners, and societies; and arrayed against them, the one who believes and even knows he can teach our calling better than any college; the dental law is a farce, and to prove it without a doubt he tells you about the number of charlatans "practising right in his own town, and if it allows them to live, what good is it?" boards of examiners are without use, "because how else could the fakir practise?" the societies are simply "mutual admiration associations," and give little practical help. We must not forget to mention the carping critic and the pessimists,—“everything is going to the dogs kind;” and last, but by no means least, the member who takes everything in hints and knowledge from his fellow, and never gives anything in return; in other words, the first-class robber. Many, many more could be mentioned, but the foregoing symptoms are so marked and pronounced that you have long before this arrived at the diagnosis, and it would be a waste of valuable time to continue down the long and varied list.

The human mind's capacity for self-deceivement is without limit. We are prone to think our troubles worse than the other

fellow's; arrayed against this last is the saying, "The easiest son to deceive is one's own self." Are we not deceiving ourselves when we claim that the colleges, State boards, State laws, societies are in any way related to certain dishonest and unethical conditions of the present? The good book says, "The poor have always with you," and without sacrilegious intent, we can truthfully state, the fakir you have always with you. He is the product of no special clime or time, and until the millennium arrives you may expect to find him. At times pessimism is to be expected, and the strongest—in severe moments—are temporarily cast down. When evil seems to prosper best, remember that "truth alone is strong," and if you have any faith whatever in a divine order you must eventually come back to rest on the verities, and not to lose hope or courage because certain conditions are against us at the time being is childish. Have faith, and take consolation in the disposition of the public to do justly where they understand the facts.

In discussing the virtues and evils of our surroundings in general, and our calling in particular, there is a tendency to forget the fundamentals, the lack of which means retrogression in any line of life, but the possession of which permeates and refines all life. These fundamentals have been from the beginning, and woe be to the dentistry when they are forgotten. They are the beginning or kindergarten of all true professional life and the want of which no institution or society can make good. To many eyes these very homely garb, are commonplace and unromantic. But they are the very stuff of true professional life, the heart of real power and action, the basis of enduring happiness and peace, of sincerity of speech, of honesty of deeds, of purity of purpose, and of kindness from principle and not from mere transient impulse. They are the noble life in every sphere. By accident of birth and circumstances one may arise to high positions, but only by the having of these fundamentals is one worthy of honor. Riches, rank, fame, and learning are mere incidents; it matters little whether we have them or not; these fundamentals are a prize open to all and that end which fulfils and dignifies life. These fundamentals of every-day and professional life are those qualities which are beautifully summed up in the homely phrase, true manhood.

After all, what a man is in dentistry resolves itself back to what he is as a man. Before any one is a practitioner of our

loved calling he is a man, and what he is as a man will determine his character in all the departments and relationships of dentistry. Education is but a training of the mind; manhood is but a training of the soul. What a noble combination! a combination which would have made our late good Dr. Garretson to exclaim, "the God-man." The true professional life of the future must be developed along these lines, and then truly can we call it a fine art. We shall then have a refined taste, ear open to appeals, a heart respondent to all necessity, gentleness yet firmness of manners, knightly courtesies, candidness of expression, transparency of motive, nobility of ideals, optimistic by nature—our presence bringing sunshine, greeting, and good cheer; last, but by no means least, "charity towards all and malice towards none." What our French brethren call the "*esprit de corps*," and we the "code of ethics," will need never to be printed, for each will then be a veritable personification of that true and only code of ethics, manhood. In closing, let me quote to you a few lines of an unknown author, an author which to me has the choicest fragrance of Faith, Hope, and Charity in professional life.

" 'Tis weary watching wave by wave,
And yet the tide heaves onward;
We climb, like corals, grave by grave,
That pave a pathway sunward;
We are driven back for our next fray
A newer strength to borrow,
And where the vanguard camps to-day
The rear shall rest to-morrow.

" Though hearts brood o'er the past, our eyes
With smiling features glisten;
For lo! our day bursts up the skies,
Lean out your souls and listen:
The world is rolling freedom's way,
And ripening with her sorrow;
Take heart! who bear the cross to-day
Shall wear the crown to-morrow."

A banquet was held at the Hotel Brunswick at 6.30, where covers were laid for one hundred and thirty-five. After a very enjoyable time the President arose and in the following manner introduced the speakers of the evening.

President Dowsley.—Fellow-members, ladies, and gentlemen, as the presiding officer this evening the very pleasant duty is incum-

bent upon me to welcome you here on the occasion of the thirty-seventh anniversary of the Massachusetts Dental Society. The theme selected for discussion is a subject in which we are all deeply interested, and we are fortunate, indeed, in having with us as our guests gentlemen whose life work has been in this direction. Notwithstanding the unparalleled progress made in dentistry and dental education within the last half-century, the resources in this direction are far from being exhausted, and at no period has greater progress been made than is being made at the present time. Therefore, any institution of dentistry which would maintain pre-eminence must be alive to the needs of the people, the demands of the profession, and the scientific developments of the day. In other words, it must be progressive in the fullest signification of the term. But I must not tax your patience, for of course I know how anxious you are, as, indeed, I am too, to hear from the very distinguished gentlemen who have honored us with their presence. It therefore gives me great pleasure to present to you, as the first speaker of the evening, President Elmer H. Capen, of Tufts College. (Applause.)

As Dr. Capen rose to respond, the musicians sang the following college song, which belongs to Tufts College:

"While our colors float above, we will cheer the home we love,
Where already we have lingered long;
Let our spirits rise to-night, let our hopes be warm and bright,
We will banish sadness with our song.

"So we hail the brown and blue, with a love forever true,
We will fling our banner to the sky;
But the world of storm we crave, so we skim along the wave,
'Mid the tempest cheerfully we sing, we sing."

President Capen.—Mr. President, ladies, and gentlemen, I am glad to be able to sing the "Brown and Blue" with you. I certainly appreciate the compliment of an invitation to this banquet and have enjoyed myself since I came until this very present moment. I should fail to express my real feelings if I did not say that I am under not a little embarrassment in rising to respond to the call of your president. I used to get on very well with public speaking when I had only ministers or people of general literary culture to address. But since I began to give attention to, and become in some sense responsible for, medical and dental education

tion, I have been brought into strange fellowship,—very delightful fellowship I am bound to confess,—and somehow it almost paralyzes me when I rise to address gentlemen who are trained in mysteries and technicalities that are wholly foreign to my own field of knowledge.

I recall a story of a very good navigator, a mate of a ship, who occasionally imbibed more than was good for him. One day when he was in this condition, the captain wrote in the log: "Mate drunk." On his return to duty, the mate asked the captain why he wrote it. "It is true, is it not?" replied the captain. "Yes," said the mate. "Then let it stand," was the captain's answer. A little while after, the captain found that on a certain day the mate had entered, "Captain sober to-day." Naturally he called the mate to an account. "It is true, is it not?" said the mate. "Of course it is," said the captain. "Then let it stand," was the mate's reply. The bearings of this story, as Jack Bunsby would say, is in its application. So far as this occasion is concerned, if I should succeed in making a good speech, it would not prove that such is my usual habit, while if I should make a poor one, as I fear I shall, you would not, I regret to say, be warranted in the conclusion that I am a successful public speaker.

I might, perhaps, save myself from the possibility of failure by dealing in generalities. I might speak on the importance of the dental profession, the opportunities it presents for service to humanity, and how much it has contributed to health and happiness, and even to the prolongation of human life. There is just one phase of the matter which I am justified in attending to, and that is the immense and increasing interest which has now been awakened in preparation for the dental profession. As your president has just said, there is a demand among dentists for a broader and more scientific education. Dentistry shares in the demand that is now made upon all the professions for a broader as well as a more accurate knowledge and a more extended and thorough preparation.

My relation to dentistry and medicine, and, indeed, all the specialties, is that of an educator. When it was first proposed that Tufts College should assume control of the Boston Dental College, for myself I thought, and in this I am sure that I voice the sentiment of the trustees of Tufts College, that we could render to education in general, and to dental education in particular, a dis-

tinct service by such a course. Here was an institution that had an honorable history, that had done good work throughout the years of its existence, that was progressive in its spirit, and striving to meet the exigencies of the times. It could be assisted in its efforts by coming into relation with some institution in which medical education was given. It did not seem to me that we had any option in the matter. That is how Tufts College came to be engaged in the business of dental education. I ought to say, further, that since I began to give attention to these things and to broaden my acquaintance with them, I have been impressed with the fact that the members of your profession are alive, that they are looking ahead and reaching out in all directions for whatever may make them stronger and more efficient, realizing that they cannot fulfil the ends of their calling without laying the broadest possible foundations and doing everything in their power to secure a scientific training and attainment.

I have recently read, with much satisfaction and, I trust, encouragement, the report of the recent meeting of the National Stomatological Society. It is true, I could not understand all that I read, and I do not claim to have any ability to pass judgment upon what I read. I cannot say whether the various papers record substantial contributions to the science of dentistry in its different departments of application and research, nor do I think *this* a matter of the highest importance. The thing of highest significance is that a body of men representing the dentists of the United States should come together and seriously consider, in a spirit of true scholarship, the great questions by which they are daily confronted in their professional experience; that they should not only be pressing forward for the solution of these problems, but that they should be seeking most earnestly for the practical equipment which would make them safe, trustworthy, and successful practitioners. It seems to me this is a very great encouragement, a most hopeful sign.

Moreover, there is abundant opportunity for important achievement in this direction. In our experience, thus far, we have found not only a popular demand for better-educated dentists, but there is a readiness on the part of the young men who are looking toward dentistry as a profession to submit to every demand that may be made upon them by way of preparation for their work. It is just here, also, that you gentlemen, in all the States of the Uni-

States, may exert a tremendous influence upon the young men of your profession by holding up the noblest ideal and by insisting upon it that they shall take all needful time in their preparation. You should see to it that they acquire something more than technical knowledge and manipulative skill. Their work is related to the whole field of human health, and they are to hold their places as educated men among other men of liberal training. There must, therefore, be some space for broad and general training, and it should precede the period of specific preparation. You cannot erect a mammoth structure upon a single pile. You must have a proper foundation for it. You must put that in, moreover, beforehand. It may be conceivable that the Cologne cathedral could be built from the top downward. But just think of the enormous increase in the expense of time and money. Yet, alas! this is the thing that we are often doing in education. If you were to make a candid confession, many of you, no doubt, would say, "I began my education at the wrong end. I got into the profession by a short cut, and ever since I have been building from the top down." You should insist, therefore, for those who are to stand in your places by and by, that they should take ample time for preliminary education, and that they should also make their specific training full and thorough.

Speaking for Tufts College, I may say that we have definitely in mind, at least, a high-grade high school education as a requisite for admission both to our medical and dental schools. We would not let these schools drop below the level, in this respect, of our State normal school. Harvard University, to be sure, has gone much farther than that in its medical school by requiring a college education, or its equivalent, as the condition of admission. I do not know whether it is their intention to apply the same rule in their dental school. But I think we must all admit that this is the ideal thing, and we can, at least, work towards it, in the hope that the time may come when nearly every dentist will have had a college education before seeking his preparation in a dental school.

I may be permitted to say, before I take my seat, that we shall open the next school year in our new building on Huntington Avenue. We have not had much money to expend in fine architecture, but we have sought to secure all the requisite facilities for good working laboratories and lecture-rooms. I think you will say, when you inspect the building, that we have been successful in

this. We shall hope to see you all at our opening exercises on the first day of October next.

President Dowsley.—I would like to call the attention of the ladies and gentlemen present to the fact that you will find the words of the songs for this evening on the menu, and I know that we have a great many singers present among the ladies and gentlemen, and I would like to hear from them all in this part of the exercises.

The next name on the programme is that of a most distinguished gentleman from Philadelphia. I say distinguished, because wherever dentistry is taught, wherever it is read, his name as a writer and an educator has become a household word. I know that every one of you will regret very much that he is not present, and I had hoped up to the last moment that he would be here, but I received a letter from him this morning telling me of the impossibility of his being here.

I regret this very deeply, first, because I did not want to disappoint you, and secondly, because I am very desirous of hearing him discuss the subject of dental education, but unfortunately cannot come because it is impossible for him to be in two places at once. In the letter I received this morning he goes on to say, "I want to compliment you on the beautiful programme which your committee has gotten up. Much as I dislike to say it, I think that Boston is on top this time. Although I cannot be with you in person, I am with you in spirit." Of course, you all know I refer to Professor Kirk, Dean of the Dental Department, University of Pennsylvania, and editor of the *Dental Cosmos*.

The University Hymn was then sung as follows:

"Our fair Alma Mater, oh, strengthen her days,
To send forth forever true sons to her praise;
Oh, widen her borders, extend her fair fame,
And let all the glory redound to her name."

President Dowsley.—The next speaker comes to us from the South, from the State which was the home of dentistry. The college he represents is where dentistry had its birth. The position he occupies, as professor in this particular school, is an important one, since upon him has fallen the mantle of the pioneers of dental education. I take exceeding pleasure in presenting to you Professor B. Holly Smith, of the Baltimore College of Dental Surgery.

Upon Dr. Smith's introduction the following song was rendered:

"Thou wilt not cower in the dust, Maryland, my Maryland.
Thy beaming sword shall never rust, Maryland, my Maryland.
Remember Carroll's sacred trust; remember Howard's warlike thrust;
And all thy slumbers in the dust, Maryland, my Maryland."

Response to toast by Dr. B. Holly Smith, of Baltimore, Md.:

MR. PRESIDENT, LADIES, AND GENTLEMEN,—I assure you I feel grateful to the one who arranged this programme for tincturing my introduction with the patriotic sentiments that swell in the hearts of all loyal Marylanders when this song is sung. ("Maryland, my Maryland.") This State love and pride is a fit parent to college love and pride, and college work is our subject, I believe.

Judging from the papers and reports of discussions to be seen in the journals, every one talks and writes about education. Such varying and widely different opinions prevail as to force one to accept them as individual and not class opinions.

Upon three points perhaps, a large majority agree: first, that preliminary requirements should be increased; secondly, course extended; and thirdly, methods of instruction improved. Many contend for a preliminary qualification equivalent to a college or university degree. I insist that the course of instruction in the average college is not the one best fitted to prepare a student to make the most of his opportunities in a dental course. Too often he is warped and dwarfed by the methods used, and fails of a symmetrical development. What is gained is gained at too great a sacrifice of time, the student having the edge taken off his ambition, and approaching the special preparation for his life work with an absence of initiative and a *blasé* temper. But beyond all he has to begin his mechanics with absolutely untrained hands, at a time of life when motor impulses are generated and execution accomplished with greater difficulty than at an earlier period.

Professor C. F. Warner, before the Valley District Dental Society of Massachusetts, says, as to preparation for the study of dentistry, "Certainly the student ought to have cultivated a certain general command of himself, both of his intellectual and manual powers. He should have a knowledge of the fundamental principles of physics and chemistry, physiology and hygiene, a good working knowledge of English, a working knowledge of Latin, but in addition the ability to observe, discriminate, reason, and co-ordi-

nate muscular movement under the direction of the will. An educated man is one who has cultivated all his powers, and can direct them to the highest in whatever field his work may be."

You in Boston who are interested in preliminary training do not realize your opportunity. Why not secure the arrangement of a course of instruction in the Institute of Technology, which might be recommended as the ideal preparatory course for the dental student?

As to increasing the number of years in the dental course, I am not disposed to favor that, because I think it an unnecessary imposition upon the student. The student who cannot be prepared to begin the practice of dentistry in three years ought to select something else for his work. Of course, it is not contended that all who enter the race will make men qualified for our profession; a small per cent. of men who attempt anything fail; we see college graduates filling positions out of all keeping of their supposed preparation, such as conductors on our street-cars; but after a proper preliminary course and faithful performance of his duties in a good dental college for three years, the average student is in a position to become at no distant day a professional man of liberal education; all the more useful as a member of the community because he is a man of action and not a dreamer.

In the matter of improvement in the methods of instruction too much cannot be done. My opinion is that the dental course should be entirely separate and distinct from the medical one. Where students of medicine and dentistry attend the same lectures the teaching is for the medical and not for the dental student. The latter is forced to make his own selection out of the material offered him, of that which is vital to his work. Not only this, but he is invariably discredited when examination day comes, and the thought is unavoidably present in the teacher's mind that he is *not* a dental student. Let the teacher teach general materia medica, physiology, chemistry, therapeutics, etc.; but what lecturer at a medical school stops to emphasize the importance of the dental application in his teaching? When this plan is pursued, four or even six years would be necessary perhaps. It was not all a joke when the president of a university said, not long since, that to properly educate one man in every specialty in medicine would take twenty-eight years.

Let the dental student have his instruction in a class to him

self, by a teacher who studies his subject from a dental stand-point. Above all, Mr. Chairman, let the teacher himself be well qualified. We should select our teachers because of their special fitness rather than because of their accessibility.

"Give us men!
Strong and stalwart ones!
Men whom highest hope inspires,
Men whom purest honor fires,
Men who trample self beneath them,
Men who make their country wreath them,
As her noble sons,
Worthy of their sires!
Men who never shame their mothers,
Men who never fail their brothers,
True, however false are others.
Give us men, I say again,
Give us men!"

President Dowsley.—If 'this meeting was held at the North Pole or in Central Africa, perhaps I would feel obliged to say a word by way of introduction in presenting the next speaker, but all that I feel it is necessary to do here in Boston is simply to mention the name of Professor Eugene H. Smith.

As Professor Smith rose to respond, the musicians sang "Fair Harvard."

"Fair Harvard, thy sons to thy jubilee throng,
And with blessings surrender thee o'er,
By these festival rites, from the age that is past,
To the age that is waiting before.
Oh, relic and type of our ancestors' worth,
That has long kept their memory warm!
First flow'r of their wilderness, star of their night,
Calm rising thro' change and thro' storm."

Dr. Eugene H. Smith.—Mr. President, ladies, and gentlemen, I think it was about a year ago that I met our worthy president on the street corner, and there we discussed in an informal manner, for about a half-hour, matters pertaining to education, dental education in particular. Our worthy president claims that during that conversation I made a promise to be present at this meeting and address you. I do not remember it, but I am willing to assume that he was right. It seems hardly necessary that another Smith should speak after such brilliant entertainment as we have had

from Baltimore. He has shown the fine humor of the family, and I will not endeavor to go into that part of it. But to be more serious, Mr. President, last month, under the auspices of the Dental Department of the University of Maryland, there was unveiled a tablet, embracing busts in high relief of two pioneers in the field of dentistry,—namely, Dr. Horace B. Hayden and Dr. Chapin Harris.

It was in 1837 that Dr. Hayden gave to the world the first course of Scientific Dental Lectures, and three years later, in 1840, Dr. Chapin Harris established the Baltimore College of Dental Surgery.

Since that day to the present time there has been carried on through the medium of societies and through dental journals a discussion, bitter at times, on the subject which is before us to-day, evening,—namely, dental education.

It has been discussed under various headings, such as "Is Dentistry a Specialty of Medicine?" "The Status of the Dental Profession," "Should a Dentist be first graduated in Medicine and afterwards obtain the Dental Degree?" and "Should the Dental Degree be abolished?"

It is a matter of dental history that Dr. Harris sought first to establish a Chair in Dentistry in the Medical Department of the University of Maryland. Failing in that the special school in dentistry had its beginning.

To many minds that step was a grave error, and since that time the multiplication of dental schools and the rapid and unprecedented advancement of our profession along the lines then laid down has seemed to these same good people an educational blunder of stupendous magnitude; while others feel, and it seems to me with good ground for such feeling, that that step of Dr. Harris was the wise beginning of a system of dental education, which has given to the world the skilful American dentist, a benefactor of his race.

The dentist of to-day is more the product of the dental school than he is the product of the medical school. It is true that we are not satisfied with that product, neither were we any better satisfied with the product of the medical school during the time of a similar cultivation.

I sometimes think when I listen to or read the statements of men in our profession regarding a thorough medical education for dentists, and the doing away of the special dental degree, that the

cannot be in touch with the present method of medical education, or with the present method of dental education as exemplified in our best schools.

So far as I am able to judge, these statements come largely from men who obtained their degrees, be they in medicine or dentistry, in what might be termed the olden time, and have little or no conception of the present status of the medical or dental school.

The cry, namely, that the wayward child, dentistry, should at once return to its parent, medicine, comes largely from men who obtained their degrees in medicine when the training meant but little.

This statement of fact does not in any way reflect to their discredit. They live up to the best of their time. It only reflects discredit when they try to make more of it than the facts warrant.

To illustrate, a doctor of medicine practising dentistry made recently this statement: "The papers which we have heard all tend to prove the need of a sound medical education as the foundation of a dental practice. This is not new, but rather a reversion to original conditions. In 1844, when I wanted to study dentistry, I found no reputable dentist who would accept me as a student unless I would first study medicine, and I, therefore, spent three years getting a medical degree before entering upon the study of dentistry."

Now, this statement of the good doctor is misleading. In 1844 a student on his way to his medical degree was not obliged to spend three years in medical study. The conditions required at that time were these:

No entrance examinations. Attendance on medical lectures two winter terms of five months each; and the second term's work was largely a repetition of the work of the first term. The final examinations were oral, the results decided by votes, a majority of which passed the applicant for the degree.

Now, I do not say but what he spent three years in getting his medical degree, but if he did, he was either conditioned or else he spent a longer time than was absolutely necessary.

The question that echoed through the ages and satisfied the past—namely, "How much do you know?"—does not meet the requirement of to-day. There must be coupled with it this question, so pregnant to our profession,—namely, "What can you do?"

I have been unable to find in the writings of those who would

abolish the dental school and its consequent degree any feasible plan for the absorption of the dental student into the medical scheme that does not provide for less technical dental training than the dental student now receives. To this I am strongly opposed. My observation during the past few years leads me to think that the M.D. degree already covers too many specialties in medicine, and that it would be most unwise for our profession to nestle under its wings.

Those who would like to see the degree in medicine for all physicians, and at the same time not sacrifice the necessary technical training, think they see in the elective system a means to this end, and cite this system as applied to the collegiate course in support of their views.

It seems to me that the comparison is erroneous, and that the elective system in medicine can have but a very limited application, and, therefore, would afford but little time-saving from the present requirements for the medical degree.

If, however, an elective scheme of medical and dental training can be so arranged that the dental specialist may be a graduate in medicine, I would still hold to the dental degree, for I feel that if the evidence of special training were thrown aside, we would soon find in our ranks men who, while studying for the medical degree, neglected but few of the special dental subjects, and had also neglected the training in dental technic.

We hear much regarding the status of our profession as compared with other professions, and the opinion is advanced that we should save time on the dental side of an elective system by eliminating the mechanical laboratory element which now enters dental training, and at the same time advance our professional standing, inasmuch as the mechanical side detracts from professional worth.

To my mind this is a foolish and weak argument. The status of a profession or calling is determined, I think, by the quality of the men who enter it, and that quality must, in our profession, be determined by education and skill.

I believe that a mechanical education is as much a part of higher education as are many of the studies termed culture studies.

I believe with Sluy, the Swedish writer, who affirms that "mechanical education insures the integral cultivation of all the faculties and all the aptitudes which make up the complete man."

I am a believer in the dental schools. I believe that the standard of requirements for entrance to the dental schools should be steadily and rapidly increased until, at last, every dental department of a university becomes a graduate school.

I believe that the course of study should cover four years of nine months each.

I believe that a part, but not all, of a general medical education should be required of the dental student.

I believe that the technical training should be more than he now gets in the best dental schools, and, believing this, I shall labor to that end, for I fear that if we sacrifice the dental training, as it is best understood, for many of the medical branches that we do not need, we shall be left weak and sad, and say with Faust,—

“I’ve now, alas! Philosophy, Medicine, and
Jurisprudence too, and to my cost
Theology, with ardent labor studied through;
And here I stand, with all my lore,
Poor fool, no wiser than before.”

President Dowsley.—I have had the pleasure on previous occasions of listening to the gentleman whose name is next on the programme, and all that I need say is that I can vouch for him. He comes from a progressive college, being the second in the country that is about to adopt the four years’ course. I have great pleasure in presenting to you as our next speaker Professor Harold Williams, of Tufts College.

The song entitled “Charlie Tufts” was then sung as the Professor rose to respond.

Dr. Harold Williams.—Mr. President, ladies, and gentlemen, I am very much disturbed in my mind by something Dr. Holly Smith has said. I allude to his fear of foreign importations in dental education, which he likens to the importation of the gypsy moth and the mongoose. It reminds me of a story. A Londoner of inquisitive disposition was once travelling in a railway car. Opposite him sat a man who had a very curiously shaped bundle. After a good deal of uneasiness, the Londoner finally turned to the man and said, “Would you excuse me, sir, if I asked you what you had in that bundle?” The man looked at him a moment, and then answered that he had a mongoose. After another period of uneasiness, the Englishman once more said, “Would you excuse me if I

asked you what a mongoose was?" "It is an animal which is in the Western islands for killing snakes." "Excuse me, sir," the inquisitive gentleman again, "but would you mind telling what you are doing in London with an animal for killing snakes?" The man replied, "I am taking it to a friend of mine who has delirium tremens." "Oh, sir," said the Londoner, "those are real snakes." "No," replied the man with the bundle, "but it is not a real mongoose." It seems to me that these fears of Smith's are not real enough to be alarmed about.

But now, getting down to the business of the evening, there is not very much left for me to say on the subject. In regard to the four years' course, many of you will remember that my connection with dental educational affairs is a recent one. But in spite of the shortness of the time, I have studied and looked at this matter from every point of view, and it seems to me the only thing for us to do is to lengthen the dental course. Under the present system the dental schools may be divided into two classes. One class of these schools is where a knowledge of science is taught at the expense of dentistry, and the other is where dentistry is taught at the expense of science. Neither of these systems has been satisfactory up to the present time. We have good mechanical dentists who lack in scientific knowledge, and who consequently cannot give to their patients the modern applications of science which they have a right to demand. On the other hand, I find a number of dentists who devote the major part of their mechanical and operative work in the early years of their practice. Both classes are scantily equipped, and it seems to me that the only way that we can get around this question is to increase the course and make it a full four years, as in medicine, which will give the dentist a little more of the scientific education of dentistry than he gets in the present school without curtailing his purely dental training. These are briefly my views on dental education, and I am pleased to say that the Tufts College Dental School is going to adopt the four years' course: This change will go into effect in 1902.

Now, there are one or two subjects which have interested me very much, indeed, since I have been connected with the dental school. In regard to these subjects, let me say that it is not so much the education of the dental student, but the education of the public to the necessity of dentistry. I wish I could have heard Dr. Williams' paper this morning. In modern times preventive medicine

the prevention of disease, is regarded as one of the most important branches of medicine. Dentistry is a branch of preventive medicine, and it is of great importance to educate the public as to its vital necessity. One of the subjects to which I allude is the question of dental infirmaries which supply free treatment for the poor. There are in Boston two great institutions of this nature,—our school and the Harvard school. They receive annually less than fifty thousand patients,—in our school thirty thousand and in the Harvard school twenty thousand. Take Boston as a centre of population, with a radius of fifty miles, and it is the second largest centre of population in the United States. We have in Boston an immense number of medical charities, and a vast number of people are charitably treated in these medical institutions. One hundred and fifty thousand people who annually receive free treatment from the medical institutions of Boston will be a conservative estimate. When you compare that one hundred and fifty thousand sick people who receive free medical treatment with the fifty thousand well people who receive dental treatment, it gives you an idea of how slightly the importance of dentistry is understood and what an enormous field is open to the dental profession. It seems to me that this is a subject that should appeal most strongly to the members of the dental profession. I am afraid that dentists are failing in that paramount duty of pointing out to their patients and to the laity the importance of dentistry in the way of preventive medicine. It seems to me almost incomprehensible that in this great city no public provision has been made for these two great institutions, and that up to the present time no benevolent support or endowment has been made for these two great charities which are fulfilling one of the most important functions in our advanced civilization.

The other subject to which I allude is the fact that this Dental Society is not leading the way in regard to the dental examination of the public school children. The Massachusetts Medical Society and the members thereof, with the Boston Board of Health, first instituted the medical examination of the public school children, and it seems to me very remarkable that members of the Dental Society have not inaugurated a similar crusade for the examination of the children in our public schools. Such an examination would be the means of preventing an enormous amount of disease, and would be an inestimable boon to the community. This has

been recommended by Dr. Grady, of Baltimore, and I hope that we shall soon see the dental profession leading the way along the lines in Boston and its vicinity.

President Dowsley.—It is something over thirty years since the Dental Department of Harvard University was established. In this connection I would say it has been said that there is always something rather pathetic about the infancy of an institution. One of the pathetic things is concerning the men who have put their lives into the infancy of these institutions. I know several men eminent in their callings who have put their lives into the infancy of this school. We have with us to-night the only surviving member of that corps of professors, and it gives me great pleasure to present to you Dr. L. D. Shepard, of Boston.

Upon Dr. Shepard's rising to respond, the musicians sang the words of "Auld Lang Syne."

Dr. L. D. Shepard, Boston, Mass.—Mr. President, ladies, gentlemen, the introduction of your president has touched a chord in memory, to which perhaps I may be allowed to refer for a moment. The first president of this Society, the late Dr. N. C. Kimball, in his annual address suggested the advantage of instruction in dentistry in connection with the Harvard Medical School. There was then no dental school in New England. In compliance with the suggestion, a committee, consisting of Drs. Keep, Rolfe, and myself, was appointed to confer with a similar committee from the Medical School. The two committees, after many conferences extending over several months, elaborated a scheme for a dental school, substantially as it has existed ever since, and which was the first in the world in which dental instruction was carried on in connection with a university. When the Dental Faculty was first appointed it consisted of Drs. Bigelow, Bacon, and Holmes on the medical side, and of Drs. Keep, Hitchcock, Moffatt, and myself. Of these two committees of conference, and of the first dental faculty, I stand here, as your president has told you, the only living representative. My many years of connection with the school and my association with these devoted men who have gone before have made the memory of the past very dear to me. Graduating also, I did, from the Baltimore College of Dental Surgery before the great war of the rebellion was started, I may in a certain sense be said to have come down to you from a former generation.

Under these circumstances, what place should a retired veter-

have in the councils of the active generals of education? You, gentlemen, deans and professors, who have preceded me, have resting upon you the responsibility of deciding all questions. You feel the weight of that obligation. One in my position possesses the advantage of looking over the ground, unhampered by a vital interest in present problems, and with a greater knowledge of the history of the evolution of dental education than any young man can possess.

In early days, nineteen out of twenty entered upon practice with only an office training, frequently of a few weeks only, the college education being the voluntary choice of the few. To-day, thanks principally to dental laws, and happily for the college, the profession, and the public, the college education is a necessity for all.

I do not agree with the statement that the profession is crowded, or that it is likely to be for many years. While the rich may be growing richer, there is a constant increase among the masses of the ability to pay for greater comforts and luxuries, and so a constant broadening of the field for dental services. This is aided also by the more general appreciation of its needs and benefits.

In view of the wonderful discoveries and inventions of recent years, such as the telephone, the phonograph, the X-ray, and now wireless telegraphy, it would be hazardous for any one to deny that any invention is possible. The practice of our art may become unnecessary, but at present I see no prospect of such an improvement in nutrition as to insure tissues of so much greater resistance to attack, or so much simpler preventive or restorative measures as to make the operative dentist less a necessity among the people for their relief and succor. So the needs upon which our work is founded is increased year by year. Although hundreds may be graduated each year, the material upon which the dentist shall work will increase faster than the supply of workers.

I sympathize with all the progressive movements tending to the elevation of the profession, the broadening of the field of instruction, and the more thorough placing of our calling among the learned professions. I agree that the more general and thorough an education a dentist may have the better dentist he is, provided always that he acquire this at no lessening of positive manipulative skill. It has been a great satisfaction to me that my son has been willing to patiently study four years in college, four in the medical

school, and two in the dental school, when, instead of these ten long years, he could have graduated from the dental school in three years, and I am happy that I was able to give him the advantage he was willing to take. I believe such a course is desirable where the conditions are favorable.

But remember we live in a strenuous age, never more so. Competition was never so keen, and the struggle for the survival of the fittest never so earnest. So such a course of instruction, however desirable, is a luxury for the few, and it is not within the limits of possibility for forty-nine out of fifty of the ambitious and promising young men who are to take our places and be useful to suffering humanity.

How long or how short a course must we insist upon for the forty-nine students? From my experience as a student and teacher and my observation for forty-odd years of schools and practitioners I would insist upon certain attainments as imperative, and upon others as desirable in addition to the imperative.

The fundamental imperative attainment is manipulative skill. In the olden times a large part of this training was received by the student in a dental office, remaining perhaps for years, where he acquired a knowledge of materials and their uses and skill in performing various operations and in the control of the hands. He then entered the college for theoretical training and to acquire a broader knowledge of technics than the private office could give him. In modern times the student comes generally to the college from the high school, and entirely untrained in either theory or practice. Under the head of manipulative skill I include all that is generally understood to be the office work done on or for a patient by a dental mechanic, in distinction from that part which is founded upon science or medicine. Under this head comes the knowledge of physics; the physical properties of materials, and how to best manipulate them; the law of forces and their application; the trained eye which can accurately estimate distance, direction, form, etc.; the reasoning mind, which, informed by the trained eye, can determine what is needed, and direct the hands in the doing; and the skilful fingers, which under such intelligent direction can, with accuracy and with the least waste of effort, perform all the work required to produce the finished and perfect result.

All surgery in its etymology shows its handwork. The practice

skill of no specialty of surgery requires as much time or as many repetitions of the doing of each act as dental surgery. I cannot take time to elaborate this point, but I think it is true. There are a few individuals in every one hundred who are so gifted that they can acquire this knowledge and skill in a short time, but I am convinced that the great majority of those seeking to be dentists will require at least two years of nine months each to gain sufficient skill to be entitled to graduation.

May I here interpolate the remark in connection with the project to lengthen the course of study to four years, that it is my opinion that under present conditions, when the student cannot as in former times earn anything in vacation, any school whose year of study is less than that usual in technical schools, like the Institute of Technology in Boston, is defrauding the student. Vacations are for rest, and should be, in justice to the student, of such length only as will serve that end.

So much time being required for preparation for work, how much shall be given to theory and science? Can we demand in this practical age as a preliminary to fit a man honestly and honorably to earn his living more than he may need to thoroughly equip him? He cannot have too thorough a knowledge of the anatomy of the head, the ramifications of the fifth nerve, of the eighth, also of the fourth and sixth, their mutual dependences and reflexes. He should know the thorax, respiration and blood circulation, and the digestive organs. But why should he waste time on the names and articulation of the bones of the foot, or the origin and insertion of the muscles of the legs? In a word, the dental student should have a special course in anatomy, more thorough in some respects than that now given in any school, and carefully eliminating the superfluous. Less criticism on other subjects applies to the schools as at present conducted. I would include in the course general and special physiology, pathology, therapeutics, chemistry, microscopy, bacteriology, and other special subjects of use in dental medicine and surgery. I do not think these subjects can be taught in less than two years. So we come to the conclusion that the college of the future must occupy all the time of the student for four years. I need hardly add that I do not consider in this scheme the order of the various studies and work, except that I do believe that some test of the mechanical talent of mind and hand should enter into the curriculum of the first year.

I have had a large acquaintance with dentists in this country and in Europe. I regret to have to admit that, as a rule, those of great learning have been poor operators, and that many with little learning have been a blessing to the community in which they labored. We all mourn the friend who has just died in St. Louis, full of years, of dental honors, and of grateful remembrances. He was an ideal dentist, the noblest Roman of them all. He did not know much of medical science, and could not be called a learned man, but during his long life he kept in view the one object of the perfection of his operations, and how to do the greatest good to his patients. His hand was open to every brother dentist. In the societies and in the clinics he was a teacher to thousands, stimulating all who came within his magnetic influence to higher ideals and more finished execution.

I have a confidence that in the future learning and skill will go hand in hand. In closing, I will reiterate my conviction that, however much a man may know, whether he may be able to talk science with Huxley, or sociology with Spencer, he must have the reasoning brain which can investigate, decide, and direct, must have judgment of distance, size, and form, and a thorough training of those wonderful instruments the fingers, before he can perform the beautiful and finished works which will make him a blessing to those who put their trust in him.

(To be continued.)

Editorial.

A SUB-SPECIALTY FOR WOMEN.

A VALUED contributor, Dr. Wright, of Cincinnati, has given his views in another part of this number on a new specialty for women connected with the practice of dentistry. This proposition is worthy of serious consideration, not alone from the fact that it emanates from an honored member of the profession, whose large experience entitles him to a patient hearing, but also that it belongs to a class of suggestions that mean an enlargement of the

field of endeavor to a portion of the human family greatly in need of independent financial extension in their sphere of work. It is strictly upon the lines of the highest altruism, and the natural feeling is to unite with it and use all possible effort to hasten the day of its adoption in college work.

Many years have passed since the writer of this, in 1866, delivered an address before a dental graduating class and a large audience in Philadelphia, and then and there took for a part of his theme the admission of women into dentistry through the then closed doors of dental colleges. The suggestion at that period was so at variance with accepted thought and practice that the remarks and arguments adduced to sustain them simply roused the feeling of amusement in the minds of the auditors and indignation among the writer's colleagues; and when, subsequently (1869), he offered a resolution before the American Dental Association, "That in view of the successful results obtained in the education of women as dentists," they should be admitted to full membership in subordinate associations,—up to that time two dental colleges had admitted and graduated each one woman,—the resolution was, of course, at once tabled. Nothing else was expected or desired. These two apparently inappropriate efforts were made simply to rouse thought upon a vital subject, not then considered to any extent in or outside of the dental profession. Any radical suggestion that tends to change the current of accepted thought must slowly penetrate the barriers of prejudice. It is something gained to secure a hearing. While the resolution was unanimously laid on the table, it accomplished all the writer intended, and very shortly thereafter the doors of nearly all dental colleges were open to women, and they are welcome members to all societies, and are, at present, in the National Dental Association not only as members, but fill some important offices. It is probable that many now active would like to forget the narrow position they occupied thirty-six years ago. He would indeed be a bold man who would now question the right of any woman to graduation in dentistry or medicine.

Allusion is here made to this historical matter in order to show, by illustration, that the suggestion of Dr. Wright, however new and contrary to accepted thought it may be, may contain a germ of practical value that will be simply a forerunner of a great advance in prophylactic dentistry. It is certainly true that we are

on the eve of a radical change in dental practice. Not that old methods will be given up, but that new ones will be added, not alone for the direct preservation of the teeth from caries, but in the treatment of the oral cavity to prevent contamination, through this source, of the entire physical organism. We, as dentists, have simply touched the outer borders of prophylaxis, and it has required the courageous work of a number of earnest men to rouse us to a conception of our duty in the premises. That the oral cavity is the main culture basin for pathogenic bacteria is well known, but how little has that fact been impressed on the minds of the present generation, either through dental or medical instruction. We must come to appreciate the fact that the mouth may be the open door for disease to enter the entire organism. When this is fully appreciated, the plan suggested by Dr. Wright may be adopted. So fully is the writer impressed with the importance of prophylactic treatment that he hesitates to offer any serious objections to the plan proposed, but that there are serious objections must be apparent. The plan means partial culture, and this is always a dangerous ground to occupy. The essayist suggests that colleges should "offer an opportunity for the partial and separate training," and that upon completion of one year of study and practice should be given a certificate of competence to practise. Admitting this to be practicable, we are left in a maze of uncertainty as to the final result of such partial education. Knowledge of human nature leads to the opinion that the majority receiving this certificate would soon become dissatisfied with the monotony of this operative procedure and gradually drift into general practice, thus involving us in a mixed profession and a lower standard. If all the legal difficulties could be overcome, such a sub-specialty would continue to be a standing menace to legitimate practice.

A comparison between these special students and the trained nurse in medicine cannot be truthfully drawn. The nurse could not by any possibility overstep the bounds of her profession and enter the practice of medicine upon her diploma, but it is imagined that the trained mouth specialist would be tempted to step over the border-line, and that without much regard to State laws or boards of examiners.

The writer is fully in accord with the idea that women are the proper agents for this modern prophylactic measure. To be effec-

tive it must begin early in life, and men are not well adapted by nature to work on children. The question involved is not so much one of sex, but is one of training. This should not be partial, but be made of equal thoroughness with that given to men; in fact, let women become dentists in the highest and best sense, and then make themselves specialists in this important work.

It must be clear that if the intelligent portion of the community had this matter thoroughly explained to them, there would be a rapid appreciation of its importance and an extensive demand for the services of carefully instructed women, but it is to be doubted whether these same people would be willing to permit their children's teeth to be cared for by one they know to be partially instructed. With the higher attainments outlined it might be possible to secure a house-to-house clientele, the only feasible method of reducing this part of operative dentistry to a system. The dentist in full practice would never be able to include this properly in his daily work.

The placing of the teeth and adjacent parts in a perfectly clean and healthy condition requires more real skill and practical knowledge than the placing in of a filling. This statement may be regarded as an exaggeration, but it is thought a careful consideration of all that this operation requires will convince the thoughtful mind that it is not an over-statement. Filling teeth is a purely mechanical operation, and, the foundation principles once acquired, it can be carried on continuously upon the same lines by one of ordinary mechanical ability. To clean teeth and place the adjacent structures in a normal healthy condition means not only an expert ability in the use of instruments, but a quite thorough knowledge of special pathology and therapeutics, and this can only be acquired by long months and, it may be, years of training.

While we may differ as to the methods of reaching a common and desired end, there can be no difference in regard to the importance of the main idea that this branch is particularly adapted for women, but let the ability be acquired by present methods. To accomplish this all dental colleges should be open to women. In the mean time the knowledge of the importance of oral sanitary conditions should be spread far and wide, that the new prophylaxis may become part of the training of every household and be as familiar to the child as the daily bath is in every well-regulated family.

DEATH OF DR. H. B. NOBLE.

THE announcement of the sudden death of Dr. Noble upon a street-car in Washington, D. C., on March 5, will carry with it a feeling of deep regret in dental circles throughout the country.

Dr. Noble was well known in the American Dental Association as well as the present National. His kindly disposition and marked ability in the work of the various legislative positions he was called upon to fill in local, State, and national bodies endeared him to a large and ever-widening circle. In the city of his greatest activity—Washington, D. C.—he will be missed more than elsewhere, for there his power for good was more deeply felt.

The death of Dr. Noble leaves another vacant place in the ever-diminishing circle of the active men of the nineteenth century, and one more of those who made a part of the writer's professional life, has gone to his great reward for duties cheerful and earnestly performed.

Bibliography.

THE RÖNTGEN RAYS IN MEDICINE AND SURGERY, AS AN AID IN DIAGNOSIS AND AS A THERAPEUTIC AGENT. Designed for the Use of Practitioners and Students. By Francis H. Williams, M.D. (Harv.), Graduate of the Massachusetts Institute of Technology; Visiting Physician at the Boston City Hospital; Fellow of the Massachusetts Medical Society, etc. With three hundred and ninety-one illustrations. The Macmillan Company, New York; Macmillan & Co., London 1901.

It is just seven years since Röntgen announced his discovery of the X-rays. The interest that this announcement excited was only equalled by the enthusiasm with which the matter was taken up by physicists throughout the civilized world. It opened an entirely new avenue by which disease in some forms could be diagnosed. Its full value in this direction was not then understood, and the time is yet too short to fully realize all the

possibilities connected with it and which will be without doubt elucidated by further study. In fact, the author clearly states that, "The following pages are rather a report of progress than a final presentation of this growing subject."

This is altogether too modest a statement of this splendid production of six hundred and thirty-eight pages. When the X-rays were first investigated it was supposed that their use would be confined entirely to the hard structures of the human organism, locating bullets, etc., but although so short a time has elapsed since the discovery of these rays, the author describes advances in their use in diagnosing disease almost bewildering to one not wholly familiar with the progress made. To the reviewer this is something near akin to a revelation, and he feels that the medical profession in all its branches owes the author a special feeling of gratitude for thus placing before it that which amounts to new discoveries in the science of disease.

The author thus expresses himself in regard to a highly honored correspondent of this journal, whose work in the direction of the Röntgen rays has not been surpassed by any other. He says, "I wish it were possible for me to express the gratitude I feel towards Dr. William Rollins for his unfailing aid in my efforts to obtain apparatus suitable for these examinations, and particularly for the new and better forms of vacuum tubes that he has devised."

Chapter I. is devoted to the "Nature and Properties of the X-Rays." This is a very clear statement, and is followed by "X-Ray Equipment," a very important chapter for those anticipating experimental work in this direction. All the new forms of apparatus are fully illustrated, including those instruments introduced by Dr. Rollins.

Chapter III., on "Methods for making X-Ray Examinations with the Fluorescent Screen and X-Ray Photograph," is exceedingly interesting, and is so thoroughly illustrated that there is no difficulty in reaching at least a moderate degree of comprehension of the author's methods. This chapter must be studied in detail to properly understand it, but it seems to the reviewer to be the foundation of all the work which follows. The knowledge must be, however, part of laboratory training and cannot be acquired by mere reading. In fact, the entire book is so thoroughly practical in its details that its proper place is in the pathological

workshop, rather than in the library. This, however, only creases its value as an original production.

Chapter V., on "Pulmonary Tuberculosis," will be read with special interest, as the idea that anything satisfactory could be developed in this disease by X-rays is a comparatively new thought and to which little credence has been given. The author says, "It was early recognized by many practitioners in various countries that the dense lung in this disease would cast a shadow which might be observed on the fluorescent screen. It seemed to me, also, that we might find in the X-rays another means of recognizing pulmonary tuberculosis in its earliest stage, and with this end in view I took every opportunity to examine early cases of this disease." The author then follows with "Appearances on the Fluorescent Screen," in this disease fully illustrated. He qualifies the value of the work further along in the chapter, he says, "The diagnosis of phthisis is not made by the X-ray examinations alone, but it does give us early warning of a departure from the normal in the lung, which puts us on our guard and enables us, in conjunction with the history, etc., to make a diagnosis, and thus in many early cases of tuberculosis to arrest its progress by proper care."

Of pneumonia the author says, "A pneumonia in its early stages, or even through its whole course, may give no signs on auscultation and percussion, and the physician may find it difficult to make the diagnosis. In some of these cases a doubtful diagnosis may be made a more certain one by the use of the X-ray. Three cases are cited as illustration of this."

It is not possible to follow the author chapter by chapter, as each has an interest of its own. The X-ray is not equal to showing all malformations distinctly, but in connection with other well-understood methods of diagnosis may be made of exceeding value. It is quite evident that the future will continue to develop new methods of observation, enabling the observer to differentiate more clearly pathogenic conditions. The author says, "Neoplastic growths in the abdomen are not easily recognized by an X-ray examination. We may get some suggestion of their presence if they affect the outline of the diaphragm; or, if the growth is well marked and dense, it may cast a shadow on the fluorescent screen or be seen in the negative."

In Chapter XVI. the author treats of the "Therapeutic U

of the X-Rays," and says of this, "The accounts given in the medical journals of the therapeutic uses of the X-rays in diseases of the skin have seemed to many practitioners beyond belief." He then proceeds to cite cases that go far to demonstrate its value as a therapeutic agent in this direction. He says of the X-rays in cancer that, "This new therapeutic agent gives us a method of treatment which is painless and useful in certain, if not all, forms of external cancer of not great depth; how efficient it will prove to be it will take two or three years to decide, but if there is a recurrence, treatment could be again instituted."

The author quotes two cases where the X-rays proved to have analgesic properties, one where a youth had been shot in the thigh. A long exposure to the X-rays produced entire freedom from pain. A patient suffering from gall-stones had a similar experience.

"Fractures and Dislocations," as a matter of course, find an extended and important place in the volume. These are very fully and clearly illustrated. "Foreign Bodies" naturally follow, and the clearness of some of the illustrations are in the direction of a revelation to some who have been accustomed to obscure definition. In one on page 545 a needle in the hand is so perfectly delineated that the eye is as distinct as though lying in the open hand.

"Diseases of the Bones and of the Joints" are appropriately given much space.

Chapter XXIII. is given up to "Dental Surgery." The author says here that, "For the successful use of the X-rays in dentistry, sharp definition in negatives is necessary, and differentiation is required between tissues that do not differ very much in the obstruction they offer to the passage of the X-rays. The roots of the teeth are only a little less permeable to the rays than the surrounding bone, and therefore it is difficult to get a clear picture of their ends." Then follows a description of suitable apparatus for this work.

The importance of the X-rays in dentistry is only just beginning to be appreciated, notwithstanding the earnest efforts of Dr. Rollins and Clapp, of Boston, and Dr. W. A. Price, of Cleveland. One reason is that mentioned by Dr. Williams,—that the difficulty of securing a clear picture is in a measure confusing. This may be overcome, and it would seem proper to make this study a part of the curriculum of all well-regulated dental colleges, for until this is done it is hopeless to expect the X-ray to

become of value in the diagnoses of certain diseases of the cavity.

The examination of calculi and an Appendix constitute closing chapters of this interesting and exceedingly valuable book. It should be in the library of every professional man, for the work of examination by the X-rays must necessarily fall into the hands of specialists, the general practitioner is required to become familiar with its possibilities and its limitations in order to meet the growing demand for its use. No other work of which the reviewer is acquainted meets the demand as fully as this volume.

The publishers have given the readers a very perfectly prepared book, both in text and illustrations.

QUIZ COMPEND ON IRREGULARITIES OF THE TEETH. By E. S. Talbot, M.D., D.D.S., Professor of Dental and Oral Surgery, Northwestern University, Women's Medical School. First Edition. E. M. Clay & Co., Chicago, 1901.

This is a decidedly new departure from the pen of this practitioner, and while it is called a quiz compend, it cannot be regarded in the same category with the usual compends that flood the market as it comprises something more than a series of questions and answers, ordinarily very brief and failing to convey a proper comprehension of the subject. Dr. Talbot has endeavored to convey in a very few words his ideas, and he accomplishes this in a manner that at once commands the attention of the reader and must arouse the interest of the student. It is not often that a book of this description is readable, but this will be found to chain the attention from the beginning to the end.

It naturally follows very much the trend of thought to be found in the author's work on Irregularities, being a condensed statement of his own views and also of the literature of the subject.

The author states in his preface that "This work is not intended to take the place of the larger and more complete works, but to be used as a primer and reference for advanced students. . . . The author has intentionally avoided a discussion of special treatments since every teacher has, of necessity, his own methods of operation."

This may interfere with its adoption in colleges, but will be all the more useful as a reference for advanced students and practitioners who desire to become familiarized with facts that

sarily lead up to irregularities. It will no doubt be an incentive to many to follow in the same line of investigation that has made the author's name so prominent in scientific circles.

The four opening chapters are devoted to History, Heredity, Congenital Factors and Maternal Impressions, Post-natal Skull and Jaw Development, and Periods of Stress. Chapter V. begins with "Development of the Cranium and Face."

In Chapter VI., on "Development of the Jaws," exception must be made to the author's statement in the following questions and answers:

Question: Are teeth more liable to decay upon the upper jaw than the lower? Answer: Yes.

Question: Why? Answer: Because the upper is degenerating faster than the lower.

Question: Is degeneracy (or arrest of development) of the jaws and teeth a cause of decay? Answer: Yes. It is a principal cause."

In the reviewer's experience it is not true that the upper jaw is more liable to decay than the lower, except in special instances. The exceptions have nothing to do with degeneracy, if that much abused word is understood. In proportion as teeth are removed from the salivary ducts will caries be more pronounced. Hence the superior molars are less affected than the inferior, and the lower incisors far less than the upper incisors. Tables of extracted teeth are unsafe guides upon which to formulate a theory of degeneration.

It is not possible to agree with all the author's conclusions, but his work on Irregularities has been so recently reviewed that space will not permit critical notices of these disagreements.

As a condensed statement of the author's views it can be warmly recommended, and it will be an aid to a more extended study of his recent work,—in fact, might well go as a companion to it.

Obituary.

HENRY BLISS NOBLE, D.D.S.

At a special meeting called for the purpose, the Board of Dental Examiners for the District of Columbia, by a unanimous vote, adopted the following resolutions:

WHEREAS, Death has suddenly bereaved us of our most beloved and distinguished associate, Dr. Henry Bliss Noble.

WHEREAS, In his relations with us he was the soul of honor, always kind, genial, generous, and helpful,—a man of unselfish disposition who ever labored to advance the best interests of all.

Resolved, That this Board, cherishing his memory gratefully, keenly feeling his loss, desire to spread this expression of their appreciation upon their records.

Resolved, That a copy of these resolutions be transmitted to his family and the dental journals.

M. F. FINLEY
C. W. APPL
H. J. ALLEN
J. H. LONDON

IN MEMORIAM.

At the regular meeting of the St. Louis Dental Society, on March 4, 1902, the following report was read and adopted.

Dr. Burt Barry was born July 26, 1871, his parents, Mr. and Mrs. L. T. Barry, of Mt. Sterling, Ill., being old settlers in Boone County, and residing there at the time of his birth. His education was in the public schools at home and in the military schools at Salina and Orchard Lake.

In 1895 he entered the Missouri Dental College, and graduated in the class of 1898. Soon after graduating he opened an office in St. Louis. For the first year he was associated with Dr. W. Gardner and the remainder of the time with Dr. G. W. Loomis.

During the summer of 1901 he had a severe illness, from which he never fully recovered. Later he went to Europe; there

remained long enough to reach the belief that the London climate was best for his health, and decided to live there for at least two years. Making arrangements to that effect, he came back to this country to purchase an American dental outfit for an English dentist, with whom he expected to associate, anticipating making the move in March. On his return he spent a short time in his St. Louis office, then went to New York City, and on January 17, 1902, was married in Philadelphia to Miss Marie Peterman, a very much esteemed lady of that city. Then he went to Mt. Sterling to visit his parents and friends.

There, on the morning of February 15, he was found dead in his bed, having died without a struggle to warn his family.

His wife was in Philadelphia at the time of his death, but reached Mt. Sterling in time to attend the funeral. His remains were interred in the cemetery on the outskirts of Mt. Sterling, on February 18, 1902. His wife, parents, one brother, and three sisters survive him.

Dr. Barry, soon after graduating, became a member of our Society, and just before his severe illness was preparing a paper on Dental Materia Medica, to be read before the Society.

In college, "Burt," as the boys called him, was studious and industrious, aiming to make the most of his opportunities, keeping up his studious habits after entering practice.

Dr. Barry was prominent in the Jefferson Club during its early history. Personally he was affable, courteous, and gentlemanly always, and he made friends readily. He was fond of athletics, in several branches of which he was skilled.

JOHN G. HARPER,

F. F. FLETCHER,

O. H. MANHARD,

Committee.

Biographical Sketch.

ROYAL WILLIAM VARNEY, M.D.

ROYAL WILLIAM VARNEY was born at Independence, Ohio, October 8, 1839, and early in life removed to Newburg, Ohio, where he received a common-school education, and later became a pupil of Dr. William H. Atkinson. About 1861 he accompanied his preceptor to New York and completed his term of pupilage. Subsequently returning to Ohio, he graduated in medicine at one of the schools of that State in 1863.

Dr. Varney soon afterwards accepted a commission as assistant surgeon in the Thirty-first Ohio Volunteer Infantry, and went with Sherman on his march to the sea. Never a very strong man physically, it is probable that the hardships and exposure of army life contributed to his untimely death. At the close of the war he became associated with Dr. George E. Hawes in New York City. He was afterwards located in a house of his own in West Thirtieth Street. He died at Savannah, Georgia, April 12, 1872, in the thirty-second year of his age.

Dr. Varney received the degree of Master of Dental Surgery from the Dental Society of the State of New York, June 29, 1870. He was a member of the Society of Dental Surgeons of the City of New York, of the First District Dental Society, and of the American Microscopical Society.

To his initiative was due the system of public clinics which prevailed for many years in the First District Society, and which spread far and wide, to the great benefit of the practice of dentistry.

Not much of a talker, he was one of the men "who do things." content to write his autobiography in the mouths of his patients. While skilful in the highest degree, resourceful in overcoming difficulties, and having full confidence in himself, yet he who might have applied to himself the words of Shakespeare, "This hand made to handle naught but gold," was extremely modest and never boasted.

Not merely an expert manipulator,—a dental virtuoso,—

was thoughtful and studious, and sought the causes of the phenomena he observed, working much with the microscope.

As a man he was inflexible in his integrity, possessing a soul of honor, a gentle and loving disposition, and some of the older dentists to-day remember him as a warm and true friend.

In response to inquiries, the following interesting letter was received from Dr. S. G. Perry:

“NEW YORK, February 25, 1902.

“In presenting a biographical sketch of Dr. Varney your first concern is for facts. Opinions are only side-lights that help illumine your subject. In response to your letter I can only say that I am not able to give you many facts, but I will venture the opinion *that he was one of the most remarkable men the profession has produced.*

“He was a natural mechanic, and to the art of finger-craft he added great force of will. He dared to attempt to do perfect work at a time in our profession when few men believed the public would submit to the annoyance, the pain, and the expense necessary to produce it. He was probably one of the first men in the profession to charge by the hour for his services.

“He died at thirty-two, and yet he left work that must remain a model for all time. His method was most simple. He opened his cavities freely, to admit the use of nearly straight instruments, annealed his gold himself to different degrees of cohesiveness, and condensed it for the most part with the lead mallet in his own hands.

“His set of pluggers tell the story of his method. His sense of form was well developed, and he contoured his fillings beautifully.

“I have no objection to your using the following extract from the Transactions of the Odontological Society. I do not take back a word of it. It is as true to-day as when it appeared in 1887.

“‘I think it is safe to say that Dr. Varney reached high-water mark in the art of filling teeth. No one who came before, and no one, to my knowledge, who came after, excelled him in saving teeth. I have seen a great deal of his work (much of it now of twenty years’ standing), and I have never seen, nor heard of, a filling of his that was not contoured. He said to me once that his ambition was, if cut short in his work at any moment, the last filling he put in should be his best,—the one he would be content to be judged by.’

“So far as I know, he wrote but two short papers, one on ‘Root-

Filling,' the other having been published in the *Dental Cosmos* April, 1871. He was too modest to allow his name to appear in connection with it. It was on the subject of the preparation of cavities, and it was so concise, and so to the point, that I think it would be well to reprint it at this time. It is only just to his memory, for as it stands it is unsigned, and there are now few living who could testify to its authorship. The *italics* are his own, and give an indication of his force of character.

"It is peculiarly gratifying to me that some one has been willing to take the trouble to revive his memory.

"Yours most truly,

"S. G. FERRY.

"PREPARATION OF CAVITIES.

[Read before the New York Odontological Society, November 15, 1870.]

Dr. R. W. Varney.]

"Thoroughly cleanse the teeth, if needed, as is most likely in every case. Medication, if used at all, to allay pain in excavating, ought to be made use of early. The common method of partially excavating, and *then* applying remedies in *hopes* of lessening the suffering, I have no patience with. Having little or no faith in local applications other than a *keen edge vigorously applied*; scarcely anything else is used at my hands. Wash out the cavity with warm water, dry, and look at it. If the pulp is not then exposed, it is an inexcusable blunder, unworthy a professional man, if it comes so during the operation. Cut away the margin as far as is required, for strength or otherwise. Form the walls, by cutting from *towards* the pulp *outward*,—never by cutting from without inward; *towards* the pulp, if the dentine is much softened. Leave the deeper portion of the cavity untouched, if need be, rather than to expose or uncover a pulp, for it can never be protected so again, except by secondary dentine. The practice of purposely exposing pulps that are only protected by a thin portion of softened dentine, for the purpose of capping with oxychloride of zinc, as advocated by some of the teachers, I most emphatically object to. Never remove darkened dentine simply because it is darker, unless situated so that it is likely to show after completion of the operation. I would never wish to have a grinding surface, buccal, labial, or lingual surface cavity undercut, but would prefer to have the walls parallel. Approximal grinding ones should be somewhat undercut, when considered from their approximal aspect, as in

retaining power is required in such cases. Have the floor, or part to be built from, as near a plane surface as is consistent with safety, and the lateral walls rising perpendicularly from it. I do not drill retaining-pits, but prefer to hold the first few pieces till self-sustaining."

I am particularly indebted to Dr. J. S. Latimer, of New York, for the facts in regard to the life of one who will always occupy a unique position in the history of the dental profession.

CHARLES McMANUS.

Domestic Correspondence.

LETTER FROM NEW YORK CITY.

TO THE EDITOR:

SIR,—The many members of the New York College of Dentistry, and also adjacent cities, who were invited to attend the lecture and reception on February 4, given by the New York College of Dentistry at the college to Professor T. E. Weeks, of Minneapolis, certainly felt fully repaid for attending. The subject was "Cavity Preparation," which was presented in an interesting and scientific manner by aid of large tooth models, enlarged microscopic lantern slides, and excavators. The vital importance of properly preparing enamel margins and of so shaping the cavity for reception and retention of filling that the great stress or strain materially imposed on a filling, in its usage, would be sustained rather by the flat floor or large part of the cavity than by the walls, the occlusal surface also being utilized in instances of approximal fillings, was demonstrated carefully and at length. To Professor G. V. Black was accorded the honor of having successfully systematized the respective portions of the tooth-structure into a simple dental nomenclature. The subject of "extension for prevention" Professor Weeks discussed, his views being conservative on the subject. He came to the conclusion that the operator, in each individual case presented, should with careful judgment decide as to what degree or extent the enamel should be trimmed and cavity enlarged to retain the filling. After the lantern-slides

were shown, demonstrating clearly enamel-rods under different forms of enamel chiselling in preparation for filling, a collation was served.

The subject at the meeting of the First District Dental Society of New York was "Practical Hints and Suggestions," by Dr. Chas. E. Francis, of New York.

A large number were present on this Tuesday evening, February 11, to hear Dr. Francis read a very interesting paper on the above subject. The paper was especially valuable to the younger men present, as well as to the older dentists, the remarks coming from one who I understand originally introduced this important subject many years ago, and who now after a long and honorable career in the practice of dentistry, extending over a period of half a century, was at last prevailed upon to come forth from his retirement and impart to those present his observations upon this all-important subject. He dwelt upon the importance of the personal appearance of the dentist, not only as regards his attire, but also his address, his desire to please and be interested in every individual patient, be they rich or otherwise, at the same time maintaining a professional dignity toward each patient. His remarks were interspersed with interesting personal experiences and reminiscences, which were very uncommon, for the doctor on first coming to our city to practise came by boat, there being no railroad connections with New York at that time, and only three lines of stages in the city. The charm and interest in an address of this character was greatly enhanced by his own delivery of it. Dr. Francis must, indeed, have felt highly gratified after hearing so many warm expressions of appreciation at the close of his address by the older practitioners who were present.

The afternoon clinics were full of interest, Dr. G. Lenox Curtis performing an alveolar operation by use of cocaine, which, by the way, Dr. Curtis says is made practically safe if volasen, ten or fifteen drops in water, is given to the patient prior to the operation.

Dr. Wm. Carr urged those present to communicate with their respective assemblymen at Albany, for the purpose of defeating a certain measure introduced there, which would not have for its object the best interests of the profession at heart.

It was announced that Dr. T. W. Brophy, of Chicago, would

read a paper on "Surgical Treatment of Congenital Defects of the Palate." All were invited, on February 26, at "The Academy."

The regular meeting of The New York Institute of Stomatology was postponed until Wednesday, February 12, Lincoln's birthday. Dr. F. Park Lewis, M.D., of Buffalo, read a paper on "Adenoids," the meeting being at Dr. E. A. Bogue's office. Several physicians were invited to discuss the paper, which was interesting. Dr. Lewis explained that adenoids were an hypertrophied condition of lymphoid tissues normally found in the vault of the pharynx posterior to the nasal opening. He defined their structure, and discussed their relation to the general system. The subject was presented in a clear and practicable manner. Among other things of importance, he said that a relationship between face, nose, mouth, and chest deformities was most fully recognized by the medical profession where adenoids were present, improper or difficult breathing causing anæmic blood conditions due to lack of proper oxygenation, etc., eventually giving rise to many disturbances or diseases, in addition to the deformities previously noted; that the element of heredity enters largely into adenoid growths, and that adenoids atrophy somewhat at puberty. He cited instances where many operations have been performed on new-born infants. He also dwelt upon the inflammatory catarrhal conditions arising from adenoid obstruction, and of many other conditions bearing on the subject. The discussion which followed evidenced a very careful consideration of this subject by every progressive practitioner.

Incidents of office practice followed the paper of the evening, and the subject of the different varieties of wood was discussed for use in cleaning and polishing teeth, orange, cedar, and hard maple being among those advocated. A simple porte-polisher was presented by Dr. F. M. Smith, through which a hole was made at the end of the instrument, into which a stick could be forced, and by having several instruments any angle desired could be had. A tooth-brush consisting of alternately longitudinal layers of bristles and badger-hairs, the latter being longer, for the purpose of brushing inflamed gums, was also presented.

A collation followed the evening session.

The twenty-second annual meeting of the Central Dental Association of Northern New Jersey was held in Newark, on Feb-

ruary 15. After the banquet, at which one hundred and fifty were present, speech-making followed. The president gave an address of welcome to those present. Among the important remarks he made was one referring to a resolution adopted to found a home where original research, examination of the saliva, bacteriology, etc., was to be pursued by aid of proper scientific instruments.

On Tuesday, February 18, the regular meeting of the New York Odontological Society was held. Dr. D. D. Smith, of Philadelphia, gave a very interesting paper on tightening loose lower incisors and cuspids by means of thorough and systematic treatment. Among the points Dr. Smith touched upon, after, of course the thorough removal of all deposits on the teeth, was that for the devitalization of the necessary teeth in work of this character. He used arsenic, adding that he had no hesitancy in removing pulps. The arsenic when applied and allowed to remain for forty-eight hours in tissue over a pulp, the latter not exposed, would thoroughly devitalize the pulp, after the removal of which the root was treated with wood creosote and allowed to remain for twenty-four hours. The changes occurring after pulp-extraction were discussed, Dr. Smith maintaining that the root was strengthened by the operation. The method advocated by him of holding or strengthening weaker teeth was by removing pulps in adjacent teeth, fitting posts in the canal to which were attached a soldered cap to the palatal side of the teeth, no gold showing whatever and joined or supported by soldering. His method could not be described in a few words. Dr. S. G. Perry and others followed in the discussion, he among others expressing the excellent results he had attained by using creosote, and filling with oxychloride, as did Dr. Smith. Dr. Rhein advocated sodium, potassium, and other medicines, considering them more scientific according to researches than creosote, which was characterized as an embalming rather than a germicidal property. Dr. D. D. Smith closed the discussion. A vote of thanks was tendered him for his able paper and the meeting adjourned.

Dr. Brophy's address on "Surgical Treatment of Congenital Defects of the Palate" was delivered before the New York Academy of Medicine on February 26. It was ably presented by aid of stereopticon slides. A large number of dentists were invited to be present. He cited among other things that, of six

hundred cases operated upon, two hundred and fifty had been successful. The importance of performing the operation at an early age was dwelt upon, and that before the child is six months old, carefully describing the changes occurring in such an operation. Many prominent men joined in the discussion that followed.

LOCHINVAR.

Miscellany.

PRECIPITATED SILVER 'TO HASTEN SETTING OF AMALGAM.—I have found precipitated silver a very effective and convenient agent for hardening amalgam fillings and absorbing the surplus mercury pressed to the surface by the process of packing. Its affinity for mercury is as great as that of freshly annealed crystal gold. Although the crystals are so small that it is practically a powder, it can be applied to the surface of most fillings quite as conveniently as pieces of crystal gold. The most serious objection I know of to its employment is its very low cost. In my own use of it I apply it to fillings in lower teeth generally with tweezers, or a small scoop, and to those in upper teeth by carrying it to place on the point of the finger. None of the silver should be allowed to remain on the surface, as it would be likely to discolor. If the filling is first made more than flush, and cut down and burnished, after hardening, the best results will be obtained.—J. MORGAN HOWE.

AN EMERGENCY CROWN.—If necessary, remove the pulp with cocaine. Prepare the root and adjust a post of such length that the lower incisors will not strike it as they articulate, and set it back in the root far enough lingually so that the facing will come into the arch. Flatten slightly the projecting end of the post, and roughen the end to be embedded in the root. Fill the root-canal with a large, soft, gutta-percha cone. Heat the post and grasp the flattened end with suitable pliers, force it to place in the root and trim away the surplus gutta-percha. Slightly roughen the interproximal contact points of the adjacent teeth with a coarse sand-paper disk. Grind the facing to fit properly, roughen the back

with a carborundum wheel, and bend down the pins to an angle forty-five degrees.

Dry thoroughly, mix some of Ames's quick-setting cement, coat the back of the facing, cover the end of the root and post with cement, then force the facing to position. Hold until the cement sets slightly, then coat the cutting edges of the lower incisors and have the patient bite; then open the mouth. Trim away the surplus cement, clean out the interproximate spaces, and contour, but leave the cement adhering to the interproximate contact points of the adjacent teeth to give greater security of retention.—J. E. NYMAN, *Dental Review*.

CELLULOID TABLE-COVER.—I wish to present a little wrinkle that may be of interest to many operators who like neat things and a neat appearance about the chair. The idea is a table-top which can be applied to any swinging table. Secure the correct dimensions, inside measurement, of the top of the table; then obtain from some artists' supply store a piece of sheet celluloid, such as is used for art work, preferably white, and of sufficient thickness to lie flat when put down. It should be fastened in place with thumb tacks. It is easily kept clean with a dampened cloth, and is no less as compared with glass tops, as well as less expensive; yet it has the same advantage that glass has over cloth for this purpose. I have been using a celluloid cover for over a year, and can heartily recommend it to my *confrères*.—GRAFTON MOORE, *Dental Digest*.

FACIAL NEURALGIA DUE TO A HAIR IRRITATING THE MEMBRANA TYMPANI.—A. Percy Allen, in the *British Medical Journal*, reports the case of a man aged twenty-one years, who had suffered from acute paroxysmal neuralgia for three months.

Having excluded dental and ocular causes, the ear on the affected side was examined, and the membrana tympani was seen to be much injected. By means of the auriscope a hair was discovered lying across the meatus, and was pressing with its end against the tympanic membrane. It was removed, and the patient immediately experienced relief. After a day or two the attacks of pain ceased entirely.—*Dental Digest*.

SUGGESTION IN THE ADMINISTRATION OF ANÆSTHETICS.—The *Modern Medical Science* gives the following extract from the *Texas Medical Journal*:

We have made it a rule to employ hypnotic suggestion while administering an anæsthetic, and we are impressed with its value. Our method is to explain to the patient the ease with which one goes under the anæsthetic, and as soon as we begin the administration we say, Breathe deeply, and as you do so, you will find the eyelids getting heavy; you are getting drowsy; you are going to sleep; you are passing into a deep sleep. This method is continued until the patient is seen to be getting very sleepy, when the suggestions are made that you will pass into a deep sleep; that there will be no nervousness or stage excitement; that you will be free from nausea and vomiting, and that when you wake up you will be free from all headaches, nausea, and nervousness. Such a method in our hands seems to have a legitimate use, and we suggest its trial by the profession. Those who are familiar with the usual methods employed in hypnotism are better acquainted with the forms of suggestion indicated and will be most successful in their use.

TO PREVENT PAIN WHEN INSERTING THE HYPODERMIC NEEDLE.—The spot where the needle is expected to enter is touched with a toothpick dipped in strong carbolic acid. A white spot immediately appears, due to coagulation of the albumin in the tissues. Shortly after, a perfect anæsthesia of the spot is manifest, and the hypodermic needle can be pushed through the skin or mucous membrane without pain at this point and the infiltration of the tissues begun. If a large arc is to be injected, several spots are marked with the toothpick dipped in the strong carbolic acid, the needle being inserted through these points.— *Medical Standard*.

SYNTHOL.—A chemically pure substitute for absolute alcohol, known as "synthol," is described in the *Scientific American*. It may be used for every purpose for which alcohol is used except for internal consumption.

Being chemically pure it does not have as much odor as absolute alcohol from grain or wood. It is perfectly free from color, is non-

irritant to eyes or skin, and has ten to fifteen per cent. more sol power than ordinary alcohol. As a killing, fixing, or hardening agent, it is in every respect equal to the best absolute alcohol, and can be used as a substitute for it in the preparation of stains and agents, etc. As a preservative, it is superior to any alcohol, as alcohol becomes tinged with color on exposure to light, while synol retains its absolutely colorless condition under all conditions. — *Modern Medical Science.*

TO PREVENT UNSOLDERING.—In cases where an investment is not indicated it is frequently desirable to observe some precautions to avoid the unsoldering or refusing of parts previously united, which is usually accomplished by the mere presence of the investment itself when such is used.

This may always be very easily prevented by coating or treating such surfaces with crocus (ferric hydrate), or a solution of pyro-bago, or whiting in water or alcohol.—HART J. GOSLEE, *Iron Interest.*

THE USE OF HEAT AS A MEANS OF DIAGNOSING THE PRESENCE OF PUS.—According to Dr. K. Lewin, of Berlin (*British Medical Journal*, January 26, 1901), the application of heat, while relieving pain resulting from simple acute inflammation, is found to produce exactly the contrary effect when suppuration is present. Dr. Lewin has applied this observation to the solution of the question of the presence of pus in cases of appendicitis. In ten persons attacked by appendicitis where Dr. Lewin applied hot compresses for one or two hours, eight were greatly relieved, while two found their pains increased.

In all the former group a spontaneous cure resulted in the course of two or three weeks, while in the two cases, after persistent use of medical treatment without result, operative interference became necessary, and pus was found in both instances.

The author considers that in applying the test it is important to use no other calmative means, and to keep from the patient the meaning, that the effect of the application may not be modified by any dread of an operation.—*Therapeutic Gazette.*

PARR'S FLUXED WAX.—This is a hard wax, containing an admixture of borax, which is much used, and is a convenient form of flux, as the wax burns out, leaving the borax deposited upon the surfaces of the metals to be soldered in small proportions.—**HART J. GOSLEE, *Items of Interest.***

GINGER AS A REMEDY.—Ginger as a remedy is commonly overlooked when a stimulant is needed. It is more popular in domestic practice than with the profession. Its stimulating influence is immediate and greater even than alcohol. It has pain-relieving properties which are difficult to explain. Whenever there is a sudden reduction of the temperature, with coldness of the skin or extremities, or there is chilliness, all accompanying some severe local pain, this agent is a specific.—*Modern Medical Science.*

ARSENICAL POISONING CURED BY ORTHOFORM.—I had a case of acute arsenical poisoning with the conditions present so familiar to all. With a spoon excavator I removed the blackened gum-tissue, syringed the parts with warm antiseptic solution, soaked the gum and surroundings with dialyzed iron, and applied twenty-five per cent. unguent orthoform. The pain in this case was the severest that I ever saw, and I must admit being astonished when the patient returned on the following day and reported that the pain had stopped and had not returned. Relief came in twenty minutes.—**A. D. KYNER, *Items of Interest.***

Current News.

MISSISSIPPI BOARD OF DENTAL EXAMINERS.

THE Mississippi Board of Dental Examiners will hold its annual session in the city of Jackson, on the 6th of May, 1902.

W. R. WRIGHT,
Secretary.

JACKSON, MISS.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY.

THE New Jersey State Board of Registration and Examination in Dentistry will hold their next examination on the following dates: Monday, July 7, Tuesday, 8, Wednesday, 9, 1902, at the office of the secretary, J. Allen Osmun, 588 Broad Street, Newark, N. J. All applicants for examination must have their application in two weeks prior to the examination.

J. ALLEN OSMUN,
Secretary

CONNECTICUT STATE DENTAL ASSOCIATION.

THE thirty-eighth annual meeting of the Connecticut State Dental Association will be held at Hartford, Tuesday and Wednesday, May 20 and 21, 1902. Every effort is being made to have a large and interesting meeting. At last year's convention over two hundred were present. A larger attendance is expected this year.

Exhibitors desiring space will communicate with the chairman of the Executive Committee, George O. McLean, Hartford, Conn.

FREDERICK HINDSLEY,
Secretary

BRIDGEPORT, CONN.

BOARD OF DENTAL EXAMINERS OF PENNSYLVANIA.

THE Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, Pa., June 6 and 9, 1902.

For papers or further information, apply to Hon. James Latta, Secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP,
Secretary

WILLIAMSPORT, PA.

SEVENTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE thirty-fourth annual meeting of the Seventh District Dental Society of the State of New York will be held at the Osborn House, Rochester, New York, April 8 and 9, 1902.

A number of valuable papers will be read and a great many clinics given. All members of the profession are cordially invited.

F. MESSERSCHMITT,

Secretary.

138 MAIN STREET, EAST, ROCHESTER, N Y.

ALUMNI ASSOCIATION, NEW YORK COLLEGE OF DENTISTRY.

At the annual meeting of the Alumni Association of the New York College of Dentistry, held on January 15, 1902, at the Hotel Majestic, the following, all of New York City, were elected to serve during the ensuing year:

President, Dr. John I. Hart; First Vice-President, Dr. Edward Fox; Second Vice-President, Dr. H. R. Armstrong; Secretary, Dr. J. Ostram Taylor; Treasurer, Dr. F. A. Chicherio; Curator, Dr. F. J. McLaren.

Executive Committee.—Dr. W. C. Deane, Chairman; Dr. Finn Fossum, Dr. B. C. Nash.

J. OSTRAM TAYLOR,

Secretary.

READING DENTAL SOCIETY.

At the January meeting of the Reading Dental Society the following officers were elected for 1902:

President, Dr. E. W. Bohn; Vice-President, Dr. George S. Schlegel; Treasurer, Dr. Elwood Tate; Secretary, Dr. C. R. Scholl.

Executive Committee.—Dr. S. E. Tate, Dr. W. D. De
Dr. H. L. Cleaver.

The fourth annual banquet took place on February 6.
fessor T. C. Stellwagen, guest of honor, was the essayist.

C. R. SCHOLL,
Secret

HARVARD ODONTOLOGICAL SOCIETY.

THE twenty-fourth annual meeting of the Harvard O
logical Society was observed as "Ladies' Night" at Young's
Boston, Mass., on Saturday evening, March 1, 1902.

After the dinner there was an oration by Herbert A.
D.M.D., entitled "Some Cheerful Facts about our Great Cou
followed by an illustrated lecture by Rev. Peter MacQueen,
of Boston, entitled "Beautiful Russia, the Home of the
Czar."

Music was furnished by Mrs. Jeanette Bradbury Cha
Miss Clara E. Shedd.

The officers elected for the ensuing year are, President,
G. W. Werner, D.M.D.; Recording Secretary, John W. Estab
D.M.D.; Corresponding Secretary, Arthur H. Stoddard, D.
Treasurer, Allen S. Burnham, D.M.D.; Editor, Harry W.
D.M.D.

Executive Committee.—John W. Estabrooks, D.M.D.,
man; William P. Cooke, D.M.D., Lyman F. Bigelow, D.M.D.

JOHN W. ESTABROOKS,
Secret

INSTITUTE OF DENTAL PEDAGOGICS.

At the close of the ninth annual meeting of the Instit
Dental Pedagogics, held at Pittsburg, Pa., December 31, 190
January 1 and 2, 1902, the following officers were elected f
ensuing year:

President, Hart J. Goslee, Chicago, Ill.; Vice-President

Patterson, Kansas City, Mo.; Secretary and Treasurer, H. B. Tileston, Louisville, Ky.; Master of Exhibits, D. M. Cattell, Chicago, Ill.

Executive Board.—W. Earl Willmott, Toronto, Canada; W. H. Whitslar, Cleveland, Ohio; D. R. Stubblefield, Nashville, Tenn.

D. R. Stubblefield was elected on the Executive Board for the term of three years, to succeed D. M. Cattell, whose term expired.

It was decided to hold the next meeting in Chicago, during the holidays.

H. B. TILESTON,

Secretary and Treasurer.

314 EQUITABLE BUILDING, LOUISVILLE, KY.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held on Saturday evening, February 15, 1902, the election of officers resulted as follows:

President, J. W. Fisher, East Orange; Vice-President, William H. Pruden, Paterson; Secretary, Frederick W. Stevens, Newark; Treasurer, Charles A. Meeker, Newark.

Executive Committee.—C. F. Alfred Hane, Jersey City; C. W. Hoblitzell, Jersey City; F. Edsall Riley, Newark; W. Moore Gould, Newark; H. P. Marshall, Newark.

FREDERICK W. STEVENS,

Secretary.

588 BROAD STREET, NEWARK, N. J.

IOWA STATE DENTAL SOCIETY.

THE annual meeting of the Iowa State Dental Society will be held in Des Moines, May 6, 7, 8, and 9, 1902. All reputable members of the profession are invited to be present.

I. C. BROWNLIE,

Secretary.

TEXAS STATE DENTAL ASSOCIATION.

THE annual meeting of the Texas State Dental Association will be held in the city of Waco, May 13, 14, and 15, 1902. The Executive Committee promise a fine programme, and the meeting is expected to be the largest in the history of the Association.

BUSH JONES,
Secretary

MISSOURI STATE DENTAL ASSOCIATION.

THE thirty-eighth annual meeting of the Missouri State Dental Association will be held at Jefferson City, Mo., May 21, 22, and 23, 1902. The business meetings of the Association will be held in the Legislative Hall of the State Capitol. The clinics being held at the State Penitentiary insures an abundance of clinical material. The papers to be read before the Association are of a most interesting character. The meeting bids fair to be one of the best ever held in the State. It is certainly to be hoped that with a change in the time of holding the meeting, and many other attractive features, the attendance should be all that could be desired.

J. H. KENNERLY,
Corresponding Secretary

AMERICAN SOCIETY OF ORTHODONTISTS.

THE second annual meeting of the American Society of Orthodontists will be held in Philadelphia, October 8, 9, and 10, 1902. Complete announcement in due time.

MILTON T. WATSON,
Secretary

270 WOODWARD AVENUE, DETROIT.

THE

International Dental Journal.

VOL. XXIII.

MAY, 1902.

No. 5.

Original Communications.¹

SURGICAL CORRECTION OF MALFORMATION AND SPEECH DEFECTS DUE TO OR ASSOCIATED WITH HARELIP AND CLEFT PALATE.²

BY GEORGE V. I. BROWN, A.B., D.D.S., M.D., C.M., MILWAUKEE, WIS.³

THE purpose of this discussion is to make clear advantageous possibilities in treatment of harelip and cleft palate by a new method which, 1, reduces the width of the fissure and thus renders a subsequent operation for closure by operation upon the soft tissues more certainly successful and more beneficial by preserving the usefulness of the soft parts; 2, by readjustment of the unequally developed bone structures, gives a more perfect contour to the form of the face after operation; 3, makes it possible to operate successfully upon patients almost without regard for age limitations. The objects which make relief of some kind desirable

¹The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

²Read at the fifty-second annual meeting of the American Medical Association, in the Section on Stomatology, and approved for publication by the Executive Committee.

³Professor of Oral Surgery, Milwaukee Medical College, and Oral Surgeon, Trinity Hospital.

if not imperative for patients so afflicted, whether the method of procedure be surgical or prosthetic, may be summed up in the considerations, health and speech, for the purpose of all treatment must be directed towards improvement in one or both of the requisites. Malformations of this nature affect the general health of individuals chiefly in two ways, by malnutrition due to inability of infants to take sufficient nourishment properly, which interferes with normal development sometimes to so great an extent as to place the lives of such children more or less in jeopardy, and nasal catarrh caused by irritating secretions, bacteria, and foreign matter, which gain access to the nasal passages through the opening from the oral cavity or constant exposure of the nasal mucous membrane to external irritants. This diseased condition usually tends to the pharynx and carries in its train many associated disorders that affect the adjacent frontal maxillary and ethmoidal sinuses, involving also nervous and circulatory disorders.

In classifying cleft palate cases, the first division recognized between acquired and congenital cases is important but quite insufficient, and much depends upon a correct and distinct classification of subdivisions under these two heads, which will convey a sufficient understanding not only of the nature of each division, but its relation to the particular kind of treatment required as well, and the special difficulties each presents that must be overcome in effecting a cure. Strangely enough, there seems to be little or nothing especially clear or valuable in this direction to be found in literature upon the subject.

Acquired cases have one of two etiological factors,—disease or accident. When the tissues of either soft or hard palate are destroyed by pathological condition, naturally the advisability or inadvisability of an operation would be determined by the nature of the cause. For instance, in syphilitic cases operation would usually be contraindicated, because of the tendency to still further loss instead of restoration of tissue. If the opening be confined to the hard palate, as frequently occurs from necrosis, such an opening is much more easily and better covered by a nicely fitted denture, but if the tissue of the soft palate has become involved speech is impaired to such a degree that more or less risk is warranted in the hope of restoring the ability to speak distinctly. Classification of congenital cases presents difficulties which can best be understood by considering them with regard to the nature

of the deformity, since there are such notable differences between typical forms of congenital fissures of the palate and lip, each with its own characteristic difficulties to be overcome in treatment, and again, in order that the surgeon may intelligently undertake their correction, it is necessary that another distinction be made with regard for the vital question of age in relation to operative procedures. Under 1, we distinguish clefts in the soft palate with hard palate normal; 2, a continuous separation through both hard and soft palates; 3, double cleft, which may bifurcate from a single one at the intermaxillary bone, or may make two continuous fissures through hard and soft palates. Age requires recognition by the following divisions representing distinct operative differences: 1, infants for whom immediate operation may become necessary on account of inability to obtain proper nourishment; 2, eight to ten months old; 3, after the deciduous teeth have erupted but before habits of speech are fully established; 4, older children and adults after the eruption of permanent teeth.

HIGH MORTALITY IN INFANCY.

The danger and high rate of mortality recorded after infants have been operated upon are too well understood among surgeons to warrant an extended discussion, for whether the death-rate be fifty per cent., as given by Ehrman, or something less, as stated by Schied, Wolff, Fowler, and other writers, it nevertheless goes without saying that if good results can be obtained by operation performed when the child has gathered power of resistance, the method which can accomplish this result must be the better method. So long as it was claimed that, in order to have perfect union of the parts and anything like a perfect development of speech afterwards, it was absolutely essential that the operation be performed in early infancy, such operations might then be excusable, but while it must be admitted that infants take chloroform with comparatively little danger, and do not suffer shock through fear of danger the nature of which they are unable to comprehend, it is only too true that they bear the loss of blood badly. In such cases, with the mouth full of wires and sutures, the inducement to take nourishment through the mouth is not very great. In fact, rectal feeding must almost invariably be resorted to because the digestive tract suffers more or less disturbance by bacteria, from the wound surfaces and in various ways. If nourishment per rectum can be con-

tinued and vitality of the child sustained until the stomach and intestinal tract are sufficiently restored to perform their normal functions, success might reasonably be expected, but too often distention of the rectum interferes before the activity of the digestive organs is restored; then and frequently does the prognosis become exceedingly grave.

CHILDREN AGED SEVEN TO EIGHT MONTHS.

When the child has passed through the first seven or eight months of infancy and is upon a fairly secure vital basis, the treatment preparatory to a future operation for harelip can be given by the method shown in Fig. 1, and the reasons why preparatory treatment is necessary by Figs. 1, 2, 3, 4, and 5, which portray the unequal development that is invariably found in these cases. If no such preparatory treatment be given, there will be a less perfectly shaped mouth, because of the extreme tension exerted to an effort to make the tissue bridge a wide space, and flatness of the mouth, because of the fact that there is no bone structure behind it, also a flatness of the ala of the nose upon the affected side, with deflection of the nasal cartilage to the opposite side, giving a markedly irregular appearance to nose, lip, and chin. This is due to the fact, very clearly noticeable in the pictures referred to, that arrest of development of the jaw upon one side or the other causes a decidedly uneven appearance to the face. Since on one side the bones of the palate protrude, while upon the others there is a corresponding recession. To overcome this a heavy wire suture is passed from the buccal surface upon one side directly through the portions of the jaw to the buccal surface of the other, drawn close and fastened at each side with little silver plates to prevent it from pulling through. (See Fig. 1.) The direction of this wire is governed in such a way that when it is slightly twisted in the centre of the mouth from day to day the tension will bring forward one side and draw back the other. This force, while gently and regularly exerted, is sufficient to alter the form of the bones in any direction desired, at the same time it brings the two sides of the cleft nose together and reduces the difficulty of future operation upon the palate quite materially. When proper form of adjustment has been secured in this manner, operation for harelip can be performed very easily and perfectly, because the space to be covered has been reduced to the minimum. The nose and bones of the

FIG. 1.



Cast of baby's mouth with double cleft palate, showing unequal development, also wires and buttons for reduction of cleft.

FIG. 2.



Cast of baby's mouth, showing unequal development. Same case as Fig. 3.

FIG. 3.



Same baby as cast Fig. 2. Shows characteristic uneven facial appearance.

FIG. 4.



Cast of mouth of baby shown in Fig. 5, before operation.

FIG. 5.



Boy six months old. Characteristic deformity of nose and face accompanying harelip.

FIG. 6.



Same baby as shown in Figs. 4 and 5, after operation, at about twelve months old.

FIG. 7.



Cast of mouth of boy shown in Figs. 8 and 9, showing extension of vomer and nasal septum characteristic of such cases.

FIG. 8.



Boy five and one-half years old: double cleft palate and harelip; intermaxillary bone with teeth growing in line of nose.

are thus straightened, and in all respects the result is more perfect than could otherwise have been accomplished. This is shown in Figs. 4, 5, and 6, which are pictures of the same baby and cast of his mouth before operation. The wires can then be removed, because the tension of the lip muscles will continue to exert a force, which will prevent widening of the cleft in the palate that would otherwise take place and continue to narrow it. Thus the operation of uranorrhaphy and staphylorrhaphy become much simplified and can be performed at any period that may seem most favorable to the circumstances and condition of the patient. Figs. 7, 8, and 9 portray in some degree the appearance of a child for whom the unopposed muscles had pulled the detached intermaxillary bone until it stood out in such a way as to appear to be a continuation of the nose, from the end of which two teeth were being erupted. In this case a little more than an inch of the projecting bone was resected, the borders of the jawbone on each side freshened, the intermaxillary forced back to its natural position and wired to the lateral portion of the jaws; operation for double harelip was then performed, with the result shown in Fig. 10. By removing a section from the middle of the bone instead of cutting off at the end to restore the defective form of face and lip, the erupting deciduous teeth, together with the germs of permanent ones, were preserved, and we know, as the child becomes older, development of these teeth will give to face and jaws an almost perfect contour instead of the deformed appearance which would otherwise have resulted.

CHILDREN WITH DECIDUOUS TEETH.

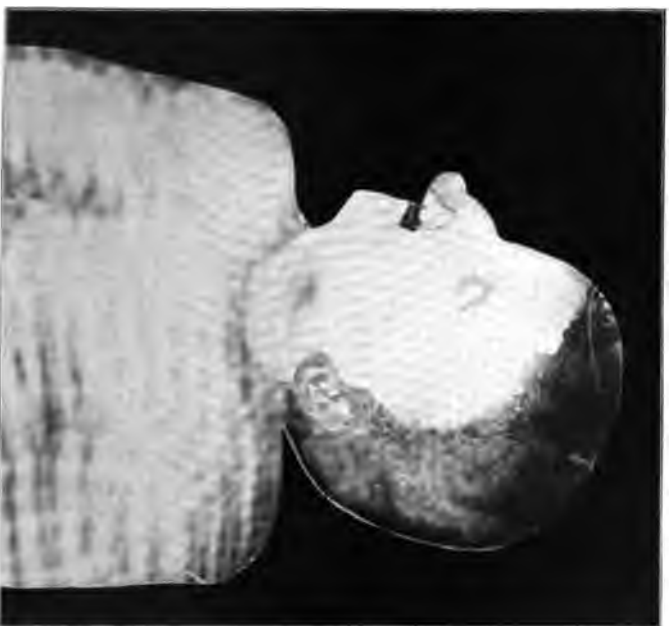
The care of cases of the third class is illustrated by Fig. 11. In these the deciduous teeth form attachments, to which are cemented metal bands that hold the appliance, which consists of a nut and bar with a thread cut upon it, so that all the different parts are brought into place by turning the nut slightly several times a day, such a pressure being brought to bear that the parts upon each side are drawn towards each other. In children of this age the bones yield readily, and in a few days, without pain or serious inconvenience to the child, the two sides of the cleft can be approximated so closely that when a bur in a surgical engine is passed along between the two borders it will cut off the soft tissue and also freshen the borders of the bone. The parts can then be screwed tightly together and the hard palate given opportunity to

unite without fear of sloughing, with the result that a complete bony union is secured, which in most cases can be depended upon to include all that portion of the cleft from the first deciduous molar forward. The benefit of this is apparent because of more complete circulation, which renders the later operation to be performed for closure of the posterior portion of the cleft and the soft palate much less likely to be unsuccessful than it would be under other circumstances. Besides this, the space is so much narrower than would otherwise be the case, that the operation is in all respects as simple as to make a good result comparatively certain. Again, with the bones united, we know that after the permanent teeth have erupted an orthodontia appliance which will exert pressure in exactly the reverse direction from the one used in reducing the cleft will widen the arch again to normal and even perfect form. Fig. 12 shows No. 11 after operation. Fig. 13 shows the case of a little boy who had been operated upon five or six different times unsuccessfully by other methods, but whose palate fissure was easily reduced by this method in a very short time.

ADULTS AND CHILDREN WITH PERMANENT TEETH.

The treatment of cases of the fourth class—shown in Figs. 15, 16, and 17, all of the same case—is in all respects practically the same, except that the appliance needs to be made of stronger material, because permanent teeth form points of attachment and older jaws give more resistance. When it is desired to hasten the contracting process, the patient is anesthetized and the surgical engine bur passed along the posterior portion of the buccal side of the jaw just under the teeth and the external plate of the jawbone cut through, this being the point at which the greatest resistance is offered, and when both sides have been weakened in this manner pressure is made by the use of suitably adjusted forceps, with which the two sides are brought as nearly together as possible without complete fracture. The appliance and screw hold the parts in place, and by continuous turning of the nut quickly brings the parts in complete approximation from the bicuspid forward, altering the occlusion of the jaws so that upper molars, instead of occluding with buccal cusps outside the buccal cusps of inferior molars, will meet on the inside. The width of a molar tooth can be taken from the width of the space between the bones at the fissure without interfering with the proper performance of the function of mastication.

Fig. 9.



Same case as in Fig. 8, side view, showing result of correction.

Fig. 10.



Same case as Figs. 7, 8, and 9, after treatment.



FIG. 12.



FIG. 11.

FIG. 13.



Cast of mouth of boy nine years old, showing fissure remaining in palate after six operations by other methods, which was closed by bringing sides together with an appliance attached to the teeth.

FIG. 14.



Man twenty-three years old : cleft hard and soft palates, bifurcation at intermaxillary bone. Before operation.

FIG. 15.



Same case as Fig. 14, with fissure reduced and appliance in place.

FIG. 16.



Cast of mouth of Fig. 14, before operation.

and all who are familiar by practical experience with cases of this character will readily understand what a considerable difference the width of a molar tooth, less space to cover, must be in relation to successful results, so far as securing a covering is concerned, and also for having less tension of soft palate tissue in the effort of speech. The principles of this method have long been practised by orthopædic surgeons in the treatment of malformation of other bones and by dentists in correction of irregularities of the dental arch. What is claimed for the method outlined is that for the first time systematic application of all these principles has been combined with methods of surgical procedure which make it possible to operate with comparatively complete success upon all cases without regard to age or the nature of the cleft, provided there be no serious physical bar to operation. If, then, this can be done at practically any age, it becomes important for us to consider all these matters in relation to results from the stand-point of acquiring perfect speech. It naturally follows that, having thus supplied a covering for the roof of the mouth of living, healthful tissue, and the same for the soft palate, a marked improvement in speech would be expected, yet this is not so, and the question as to "why it is not so" embodies in itself many considerations. While flexibility of the velum after operation and absence therefrom of scars with cicatricial tissue to stiffen and to interfere with the muscular movements are desirable, even indispensable for its perfect vocal assistance, the real reason why the speech of adults improves so little is the same as that which causes an American to find it difficult to speak French, German, or other foreign language, and when he does so to think the sounds he makes the same as those made by natives in pronouncing the same words, for he is conscious of no distinguishing difference, whereas differences do exist in a marked degree and are quite noticeable to other people. There are several elements in the explanation of this fact that are worthy of consideration and lead us directly to a study of the mechanism of speech. To get perfect speech as a result of palate operation we must, 1, supply tissue, which will serve to prevent the nasal sound by shutting off the nasal passages at the proper time; 2, the ear must become so trained as to distinguish readily incorrect sounds in the pronunciation of words; 3, the brain-centres which receive the impressions that excite sound vibrations must carry to the

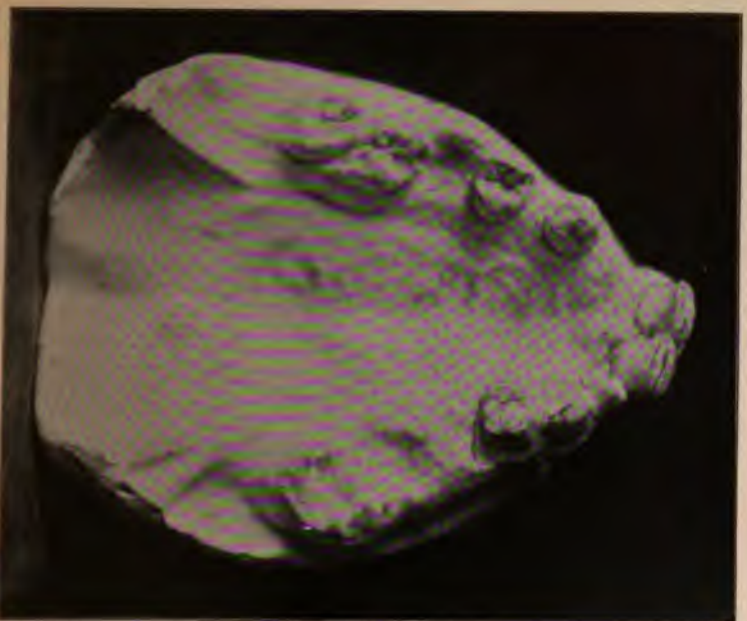
against correct speech, and if there be an insufficient development of those centres which are needed for perfect speech, how great becomes the difficulty of giving a speech power to individuals on the face of all these acquired disadvantages!

It is too narrow a view of his own special portion of the sound-making apparatus that has so limited the oral surgeon in his consideration of this subject in the treatment of cleft palate. There has been laid down the absolute necessity of having a soft palate which will be capable of entirely excluding the passage of the air through the posterior nares, thus to overcome nasal tones, but a well-known writer has recently stated that this is a false idea, since there are many times in speaking and singing, during which the passage of the air through the nares is not excluded, and yet no nasal tones are noticeable. As a matter of fact, both the quality and tone of the voice are largely decided before the sound wave has reached the soft palate.

Practical examples of the truth of these theoretical principles are shown by the accompanying illustrations. Figs. 18, 19, and 21 show photographs and casts of the mouth of a patient before and after operation. The cleft was confined to the soft palate alone.

Figs. 22 and 23 show a very large cleft extending through both the hard and soft palates. Both these patients are girls about the same age, yet the speech of No. 22, with a much greater deformity, was somewhat clearer than No. 18 before operation, with a small opening in the palate. This is particularly interesting because of the unusual development of the muscles that raise the tongue and the constrictors of the larynx had enabled No. 22 to force the back of the tongue up into the cleft and narrow the pharyngeal opening, thus, as to overcome, in a measure at least, the deficiency, but the usual muscular action will undoubtedly militate against success after operation when the case is completed. No. 18, having been given almost a perfect velum (see Figs. 19 and 21), one quite flexible and free from the thickening of scar tissue, while much improved in ordinary conversation, retains a good deal of the characteristic disagreeable vocal sounds, and when excited becomes almost unintelligible, yet when reciting a little piece that I have recently taught her to say properly, the involuntary office of the auditory and other memories being by effort excluded, she gives a nearly perfect vocalization, marred only by a slight nasal tone more than many persons with normal palates acquire through

FIG. 17.



Cost of mouth of same case as Figs. 14, 15, and 16, after operation.

FIG. 18.



Child sixteen years old - cleft soft palate.

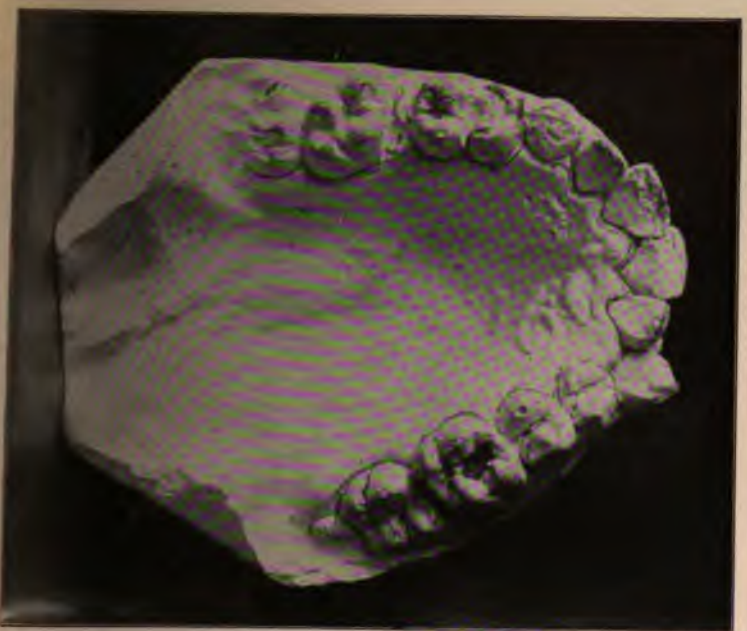


FIG. 19.



FIG. 20.

FIG. 21.



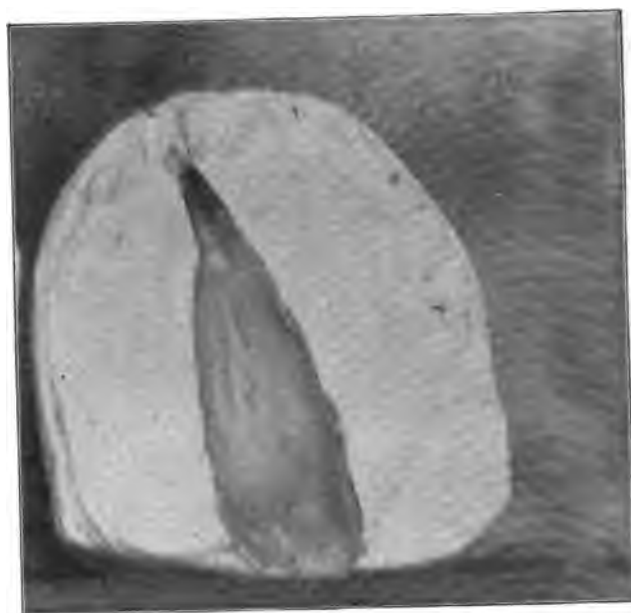
Cast of mouth of same case as Figs. 16, 17, and 20, after operation.

FIG. 22.



Elif Akkaya, 3-year-old; cleft through both hard and soft palates.

FIG. 23.



Cast of mouth shown in Fig. 22.

catarrh or habit, and thus we have clearly established the fact that only a few weeks after operation it is possible with a little care to get nearly perfect speech. A summary of conclusions from the foregoing would be as follows:

1. The risk of operation in early infancy is unnecessary except where vitality of the child is threatened by malformation.

2. The most favorable time for operation is after the deciduous teeth have been erupted, but before the habit of speech has been acquired.

3. Difficulty of acquiring correct methods of pronouncing words after operation in adult cases can only be overcome by careful mental training.

4. There can be no cases which cannot be improved by treatment and operation, both with regard to health and speech, no matter what the age may be, providing the co-operation and assistance of the patient may be assured.

EXTENSION FOR PREVENTION.¹

BY DR. GEORGE S. ALLAN, NEW YORK.

IN the excellent series of papers published in the *Dental Cosmos* for May, 1901, almost every phase and view of the theory of extension for prevention is ably presented. But little can be added except as it may present individual views *pro* or *con* on either side. I say this much with great reluctance, as I am prejudiced against hash in society meetings. Having committed myself, however, in a weak moment, and the chairman of your Executive Committee being obstinate and self-willed, I must make the best of it. The "dogma," or doctrine, however, is so radical in its nature and so contrary to ordinary conservative thought, that we may well afford to give it a little time and attention, even if we do get but little new meat in the effort.

We are accustomed to father the expression *ex. for pre.* on our able scholarly friend and brother Dr. Black, but Dr. Black in a late letter to me disclaims the honor, though he accepts the

¹ Read before The New York Institute of Stomatology, January 7, 1902.

greater one of being the real father of the principles of the dogma itself. Some one else "dubbed" it as the doctor expresses it. The first announcement of the doctrine was in a series of articles in the *Dental Cosmos* in 1891. Farther on in the letter I have referred to, Dr. Black writes: "You will see that all of my time is not spent in harping on ex. for pre., and also that I do not treat children precisely as I do grown-up folks, for reasons other than the conditions of the dentine." These two expressions taken together mean that Dr. Black's mind is broad enough to grasp the fact that no single dogma is great enough to cover the whole ground to the exclusion of others equally good and essential to correct practice. Most of you have undoubtedly read carefully the literature of the day on this subject, and come here with your judgment more or less decided as to its merits or demerits. Later on may be I will find out what they are. For myself I am convinced of the things. First, that with much that is good and valuable there is even more that is bad and dangerous in the dogma, ex. for pre. and that the dentist who gives it a ranking place in his dental work takes dangerous risks, and will probably regret it in the future. Secondly, the doctrine, except in name, is not new and its essentials is the same that Drs. Varney and Webb gave to the profession many years ago. Names, however, do not amount to much and before a society like this may well be ignored.

If I were asked what the main business—duty—of the dentist was, I would say it was to save not only the teeth of his patients but all of each tooth that was salvable, and in doing so I would seek to make certain that he gave a minimum amount of pain and discomfort joined to a maximum amount of success. The criticism then, that I make on the dogma is, that it does not meet these requirements. The first thought that presents itself to my mind runs like this: Can it be wise and prudent to cut away so much tooth-substance in amount from two to ten times that actually required to remove the carious portion and properly shape the cavity in order to save the tooth? Is not such practice a sad confession of the inadequacy of the modern methods to meet conditions as we find them? And further, is it not well to pause before adopting it, to consider well this fact,—viz., that no amount of skill can ever replace what you have so recklessly cut away, in case the lapse of time proves that you have made a mistake, that you have not put in a filling that will last "a hundred years

or "forever." And who can say that an immune period of decay may not recur, and thus do away with the necessity of extensive cutting? Such an uncertainty might well call a halt to the most enthusiastic. One must, indeed, know well what a master of technic he is and how great his knowledge and skill to take such risks, and to be able to say to his patients I know what I am about, and you must accept my doctrine unquestioned. There is no other road to success. This one does not admit of failure.

The dogma has as a foundation certain well-recognized facts pertaining to the origin and early stages of caries of the teeth. The existence of these conditions was recognized and made the basis of all active procedures for the prevention and arrestation of caries long before the reason why was known or admitted of scientific explanation. Now that it is known, and for nearly all practical purposes, every phase and form of the destructive work comprehended we are enabled to work, not so much more surely as to results, but far more intelligently. Many things in this world have been done well "by the rule of thumb," as the expression is, that in the end have been done better where this same rule is well lighted by knowledge; and, what is of more importance, more improved methods have taken the place of the more crude ones based on experience and personal skill only, and a larger number of good workers has followed as a necessary sequence. From a very early date it has been known that caries always worked from without inward,—from the surface of the tooth towards the centre,—and those intelligent, skilful men who excited the admiration of the profession in its infancy had a reason for the faith that was in them, and knew well what they were about when they said in effect that cleanliness was the first law in the salvation of the teeth, and a perfect stopping the next. It covers the ground to-day just as perfectly as it did fifty years ago, when Dunning, Maynard, Townsend, and others led the way. But this is a bit of a digression.

W. D. Miller first gave a rational explanation of the causes that make caries of the teeth. Too much credit cannot be given him for his long laborious work ending in such complete success. No one questions to-day that the baleful germs he brought to light are not only the first cause of the disease, but the continuing and ending one as well. In one respect only did he fail to change the views previously held,—viz., that the decay commenced on the outside of the tooth, that the germs in growing as a waste product

secreted an acid, and that this acid chemically destroys the tooth. The author briefly states the case. The new doctrine takes hold of the dental work, and, by the use of so-called gelatinous plaques (see *Cosmos*, 1897, articles of Dr. J. L. Williams), shows that there are certain areas of the tooth more liable to decay than others, and that the durable filling must not only take the place of the carious portion of the tooth, but that a much more extensive filling is required, which, though not affected, lies in the zone of liability, and if left alone, probably decay, from the fact of its not being in a self-cleansing arc. Where decay is rapid in growing teeth, or, for that matter, at any period in life, gold as a filling material is contraindicated. It is better and safer practice to resort to either gutta-percha or amalgam to tide over these years. The results are sure to follow. Again and again have I seen perfect complete arrestation of decay follow these methods, and have been enabled at a later date to permanently safe-guard the teeth with gold.

Two thoughts have naturally presented themselves. First, how can this zone of liability be accurately mapped out, so that it will contain neither more nor less than enough of tooth-substance to meet the requirements. To read the statements of the advocates of this method, one would suppose the problem was an easy one to solve. No great importance seems to be attached to it. It is taken for granted that a little thought and study, following definitely laid-out lines, is all-sufficient, but I for one do not agree with this opinion. Approximately it may be in some cases, but my belief is that from the very nature of things it is an indeterminate problem, one in which the guiding factors are ever changing as environment, personal habits, or conditions in life change, and cannot be made to conform to fixed laws and directions, and in no two cases can a similarity in all the factors be predicated. This of itself would be enough to make the cautious man hesitate and doubt, not to mention his own judgment, but the judgment of the sponsors of the method. The true professional instinct might step in and say, I cannot justify this sacrifice of sound tooth-substance, where there is so much uncertainty; and, if they see clearly they might add, My conscience will not permit me to do this thing; and if they have careful

¹ This was known before, but the real meaning was not known until it was found that the plaques hold the germs against the surface of the tooth.

the able, clean-cut paper of Dr. Safford Perry, they might also add, My reverence for the natural teeth is too great to permit of it.

Secondly, accepting the fact that there is a zone of liability to decay more or less clearly defined; that certain portions of the contiguous territory of the carious teeth are more vulnerable than others, the all-important question to ask is, cannot these danger points be as well safe-guarded in some other and more conservative way? For an answer to this question let me read to you from a little but very valuable book, the title to which is "Lectures on Operative Dentistry," kindly sent me by the author, Dr. G. V. Black, in answer to some inquiries I made by mail. My answer to this then is, a little better and safer method is at hand, and the putative author of the dogma *ex. for pre.* puts it in a nut-shell for us. What is true of the buccal surfaces is equally true of all other tooth-surfaces. The law holds good in all mouths and under all conditions, and we have but to follow where it leads to insure success. I say, then, make your fillings in the minor cavities equally good with those in the major ones, and protect the area of liability by strict attention to the laws of prevention of decay by enforcing cleanliness on the part of the patient, and see that you do your own part faithfully and at regular intervals. It is a curious coincidence of dental thought that at the very time that *ex. for pre.* is being so vigorously pushed and advocated, that other one of insuring the salvation of the tooth by a rigid adoption of the means of keeping them clean, both on the part of the patient and of the dentist, should also be most strenuously pushed. I am glad it is so, for it will help many doubtless to a more careful consideration of the whole question.

Allow me to present some other views of the good and bad points of the radical and conservative methods of practice. Maybe they will do good. The claim made is, that by sacrificing in the beginning that portion of the healthy tooth adjacent to the cavity, which from its position is liable to decay, and including it in the cavity, thus extending the walls of the cavity to areas immune to decay, permanent results are obtained, and the face of the tooth so treated and well filled will not decay again. The operation becomes a permanent one in every sense of the term. What more could one ask for? I omitted to say that the advocates of this principle maintain that such operations can be both successfully

and rapidly made, and without giving an undue amount of pain or discomfort. Of course, the contour and finish will be in the most approved manner. In the old days of Varney and Webb cutting away of tooth-substance was accompanied by great pain and suffering, of which I have personally the most feeling lessons.

I do not understand how "three or four cuts with a Wedelstaedt obtuse hoe will so extend the cavity at the gingival margin that when the filling is completed it will be covered by a healthy gum septum," but I accept what Dr. Wedelstaedt says as true in his hands. Times change, indeed, but I doubt whether human pain and suffering have changed as radically when the modern improved tools are in the hands of the expert. But little if anything is said on another point, to which I will now draw your attention.

We all know how approximately large gold fillings to the depth of the pulp invites sensitiveness and irritation, and oftentimes inflammation and the subsequent death of the pulp. Why neglect? The danger is as real to-day as it ever was. To be sure the claim is made that the work is rapidly done, but the effect at the end must be the same. Dr. Black says (*Dental Cosmos*, 1891, page 537), "If the tooth survives the operation, as undoubtedly the most of them do, and sensitiveness to thermal changes ceases, still other pathological changes may result. The irritation oftentimes invites the formation of secondary dentine in the walls, especially in that portion near the floor of the cavity, and the vitality of the tooth as a whole is lessened." And there is no doubt that liability to cleaving and breaking is greatly increased. It is well here to notice the claim made for rapid work. The dental school recognized certain physical properties in gold, which could not be altered or amended. The relation between force and time was a constant one, and did not permit of change. To pack thoroughly,—and no one believes more decidedly in this real packing of gold and producing a solid filling than Dr. Black,—the force required must be in direct proportion to the size of the pellet or cylinder to be condensed, welded into a homogeneous mass. Now, the rapid work of necessity means the use of small pellets, and these in turn mean much greater force and compact packing, or a softer, less compact filling. There is no getting away from this statement of law and facts. Varney and

Maynard and Dunning, all advocated small pellets, small points, and accepted slow progress as an unavoidable necessity.

Lastly, the objection to the large and unsightly gold fillings is a real one, and rests on a solid foundation. I am thankful that the demand for art that does not disfigure and make ashamed is on the increase. More and more do I find patients demanding the hiding or removal of the yellow, shining golden signs from their mouths and the substitution of something more in harmony with nature's perfect work. As one patient put it, "I want to smile without twisting the corners of my mouth out of shape."

Dr. Johnson's book is one of the very best on operative dentistry that has been given to the profession, and ought to be in the hands of all for study and ready reference, and yet see what a strange practice he advocates. On page 83 he says, "Teeth breaking down in early life where caries is progressing rapidly require the most strenuous means to bring them under control, and this means with him the most heroic cutting in order to remove not only that portion which has decayed, but that other and much more extended portion which may decay, so that safety and permanence may be assured." At this early age—the term is a little ambiguous and indefinite, to be sure, but probably includes the period from twelve to sixteen—at least the roots of the teeth are not fully formed. The pulp is full of life, vascular and sensitive to a great degree, and relatively fills its maximum portion of the interior of the teeth, and yet in these cases he would give the dogma full swing, carry it to its fullest extent. To such an audience as this it is needless for me to say what that means.

To my mind the really modern, up-to-date practice draws the line sharply between the heroic method and the conservative one, and in all doubtful cases adopts the latter, and children and all others where caries is rapid and progressive are classed in the conservative list. Moreover, they look upon this latest Western fad as being new only in name. The methods of shaping cavities are modifications only of the old, adapted to Dr. Black's theories regarding the treatment of the enamel margins. The ways of packing the gold, the shaping, contouring, and finishing the margins, especially the gingival ones, are matters of history, excepting again the extension of the gingival margins, and I question very much if there will be found on examination any great fundamental difference in the instruments used or in the method of handling

them; and what is of more importance, the limitations of its usefulness and its exact position as a means of saving teeth are clearly defined. Experience is a rough teacher, but he does work well, and all have to acknowledge his edicts.

It is amusing to read the cases reported by the new school of proofs of their position. Poor, sloppy, careless work has sins to answer for, but no one of them is greater than this of being made the father of ex. for pre.'s great merits. As I read reports, most of the failures reported are attributable to the dentist's lack of care or ability, and indicate the probability that in the same hands ex. for pre. practice would show even worse results.

The only reason why the methods advocated by Drs. Webb and Varney were not adopted generally, confined though they were to special cases, was on account of the inherent difficulties met with in putting them into practice, coupled with the pathological sequences, frequently resulting in invalidating and worse than invalidating the otherwise most successful operation.

It is a mistake to say that the Varney and Webb methods were not accepted by their contemporaries. In truth, they were accepted not only then, but they hold their own to this day. They are not and are rejected only by those few in number who could not attain unto them, for many and divers reasons, principally those related to incapacity or ignorance.

The quotations given by Dr. Wedelstaedt, taken from "American Text-Book of Operative Dentistry," in support of his statement are wholly irrelevant and lacking in force. The quotations are taken from chapters relating to composition filling materials, and the fillings composed of two or more different materials,—and in no way directly or indirectly refer to the Varney methods, and prescribe only the proper modes of procedure where such ways are indicated. Granting, though, that the Varney-Webb methods were rejected,—which is a mistake,—it in no way disproves the position taken by so many that the principle and practice so loudly claimed and strenuously advocated as new and peculiar is neither one nor the other, but is old, and in this time of rapidly moving events and changes might even be said to be venerable withal. It has been weighed in the balance and found wanting, but on those qualities which contraindicate its adoption, except in special cases. Where it is good it has been found to be very good, and where it is bad it has been found to be bad indeed.

In closing allow me to again quote Dr. Black's remarks, as found on page 142, "Lectures on Operative Dentistry:"

"It sounds the key-note of the successful finished practice of to-day, a practice that, backed by the knowledge of causes and effects so recently acquired, enables us to save practically all that is salvable of the infected tooth or teeth of our patients, and its advocates thoroughly believe that it is better to trust to thoughtful, intelligent, persistent care and attention to keep the teeth clean and safe, where indications are bad through the period of danger, than to Providence backed by a mutilated tooth and a disfigured face."

On page 830, *Dental Cosmos*, September, 1899, Dr. Black says, "Why not, then, make an honest attempt to tide over this dangerous period by cautious consideration in shades rather than resort to the destructive ones?"

It is well, though, and wise to inquire carefully into the causes that have brought this so-called new departure so prominently into notice. There must be a reason, and a good one, to make such men as are back of it—men so earnest, honest, and capable, commanding our respect and confidence to so great an extent—take the position they do. Real evils must be in existence that they wish to remove, real dangers to avoid, or they would not be found fighting so grandly for the faith that is in them. I honor them for it. I like them exceedingly, and am only sorry I do not know them all personally. Those who do not accept in full measure all that is said and written in advocacy of ex. for pre. must think, act, and work also. They have much to do, especially in the way of explaining, and they will also have some things to apologize for that may not contribute to their peace of mind.

I take it that the real strength and force of the new movement will be found to lie just here. Too much poor work has been done, too many salvable teeth are being lost, and in general the profession does not live up to its standards, or equal the expectations placed in it. Ex. for pre. is a protest against the imperfect, neglectful services of the day. It takes its life from the belief that the average man cannot command good work at all times, or that continuing care and attention that means safety and comfort. Therefore the one complete operation must be made to bear the burdens of the future, as well as the necessities of the present. Maybe too much reliance is being placed on this single operation,

and better results can be obtained by other means, extended they may be through longer periods of time.

It would be difficult to define clearly what the best practice is. Conditions, details, and methods vary so much that the fundamental controlling thought may be expressed in this form, a clean tooth-surface will not decay. So all the energies of the operator are directed to obtain and maintain this condition. Eternal vigilance is the price of liberty, so also is it the one way to the salvation of the teeth.

If the carious portion of a tooth be carefully removed, the cavity thus formed be kept clean and free from caries-producing germs, no fresh decay will follow. The impossibility of obtaining this thing makes the filling necessary, so that a continuous surface, which can be kept clean and free from germs, may be obtained. In no case is there any saving virtue in the filling-material itself, unless it may be in some of the copper amalgams. At the best a filling-material is a necessity which ought to be limited in amount to replacing the lost portions of the tooth only. Any excess of filling-material beyond these requirements means the weakening and impairing the remaining portion of the tooth.

As the preparing and shaping of the cavity is primarily to remove completely the carious portions, too much care and attention cannot be given to it; but almost equal pains must be taken to that other necessity, the so shaping the cavity that a filling may be inserted—one so perfect that no moisture can get access to the walls of the cavity. For this purpose, and that some portions of the walls of the cavity may have to be cut away. If gold is the filling-material employed, the access to the cavity must be so enlarged that direct pressure may be directed to all portions of the cavity in order to obtain perfect condensation and adaptation. Varying skill and technic on the part of different operators, of course, make great differences as to the amount and mode of removal of tooth-substance. What I want to get at is the emphasis to is that it takes more skill and ability to fill the small approximal cavities, from one to two millimetres in diameter, especially between molars and bicuspid, and make perfect than it does the larger ones, the access to which is so much easier. Given, though, the perfect filling, let it be large or small, and the surfaces clean by faithful attention on the part of both

and patient, and tooth salvation results, with many advantages accruing in favor of the small filling. Small fillings in the approximal surfaces of molars and bicuspsids fail to fulfil their mission in greater degree than the larger ones, only because they, as a rule, are more imperfectly made, and for no other reason.

AMONG THE HONDURIANS, ANCIENT AND MODERN.¹

BY GEORGE BYRON GORDON, CAMBRIDGE, MASS.

MR. PRESIDENT, AND FELLOWS OF THE ACADEMY,—The subject on which I have the honor of addressing you is, as the President has just said, Hondurians, Ancient and Modern; and I may say that of these two, the ancient Hondurian and the modern Hondurian, it is the ancient Hondurian that appeals more strongly to my sympathies and has the greater claim upon my imagination. It is very likely that the modern Hondurian might appeal more strongly to our sense of humor; but in all serious aspects of scientific research, in all that concerns the student of human affairs, of political organization and social evolution, of the development of arts and sciences, it is the ancient Hondurian alone with whom we are concerned.

To speak correctly, the ancient Hondurian is not a Hondurian at all. He is a member, or was a member, of a great nation which dominated all of Central America, from Tehuantepec to Darien; whereas the name Honduras, applied first by the Spaniards at the time of the Conquest to that part of the main-land which borders on the Caribbean Sea, is applied to-day to the political division of Honduras, one of the five little republics into which Central America is divided. The name means the land of great depths, the land of mystery, the land of profound solitude. All of these things the name "Honduras" means in the Spanish tongue, and it is of especial significance, showing as it does that at the time when the Spaniards first arrived there, of all lands they had seen it was the one that most impressed them

¹ Read before the American Academy of Dental Science, January, 1902.

with the sense of solitude. And yet—although they did not see it—those same forests, before which the intruders paused in amazement, may, hid the ruined temples and palaces of a people much more powerful, much greater, and possessed of a vaster wealth than Cortez or Pizarro ever saw. I dwell particularly on this, because it has been stated on what is considered high authority, that the Spaniards actually came in contact with the civilization of the ancient people of Central America, and it was through the agency of the conquerors that that civilization was destroyed. This is not so. Whatever fate may have befallen them, that was not the fate of Mexico and Peru. The strange, mysterious race that at one time reclaimed this part of the American continent from the wilderness, built upon its beautiful and fertile valleys immense cities, and reared there their palaces and temples, and altars, had already passed away at the time of the advent of the Spaniards; and the wilderness, reclaiming the land, grew up about their deserted palaces from the spoiling hand of the conquerors.

Who these people were, where they came from, what their achievement was, and what ultimately befell them,—these are questions that cannot be answered at present. And yet I know of no set of questions that more answers have been given to than this very same set of questions. According to some, as you all know, the lost ten tribes of Israel travelled all the way across Asia to the Behring Sea on the ice, until they found a suitable home in America. According to others, the Eastern Asiatics did something of the same sort. According to others, the Phoenicians included America in their colonial policy. And according to others, still, the Irish, in some indefinite, remote past, anticipated posterity by emigrating to America. But all of such theories are equally worthless, and no satisfactory answer can at present be made.

As to what became of the people in the end, of course it is impossible to think of pestilence, of earthquake, of famine, of civil war, but it is very hard, indeed, in the light of the facts which we glean from our investigations, to give an answer that is at all satisfactory. It would seem, however, that a remnant of the same ancient people exists in the tribes that inhabit the Central America of to-day, but by no means pure. If they are, we believe, the remnant of that old race, they are mixed with other races, barbarians, very likely, who lived on the outskirts

ancient civilization of Central America until its downfall. They all speak dialects pertaining to a common stock language, called Maya, the language spoken by the ancient people of Central America.

The name Maya, then, is the name by which that ancient people is called. I have not time to discuss the name with you, to trace its origin, and show the reasons why it is applied; but it is the name which is appropriate to that people and to the remains that they have left behind them. These remains are found, as I said, scattered all the way from the Isthmus of Tehuantepec to the Isthmus of Panama. They are most abundant on the peninsula of Yucatan and in Guatemala. The latter is the most northerly of the Central American states. It occupies the whole of the Mexican boundary, with the exception of the short piece occupied by the north end of British Honduras which takes a slice off the east coast of Guatemala. South of Guatemala and British Honduras comes the republic of Honduras; next to that is Nicaragua, and between that and the Isthmus lies the republic of Costa Rica. The ruins which we are considering are found all the way from the southern states of Mexico to the boundaries between Honduras and Nicaragua; and there the land becomes quite narrow, so it may be said that the greater part of Central America was at one time occupied by this great nation.

It was to explore these ruined cities that expeditions were organized and sent out by the Peabody Museum, Harvard University, the first one leaving Cambridge in the fall of 1890. The collections brought to Cambridge, which are very extensive, represent almost all of the important groups of ruins, and though they can convey no adequate idea of the ruins to which they pertain, they are sufficient to show that the people attained in certain lines of industry a marvellous skill, and that among the ancient peoples of the earth they occupy a very high position. The results of these explorations will ultimately be published in the memoirs of the Peabody Museum. Two memoirs have appeared in which outlines of the work accomplished have been given, and another one is going through the press now, in which certain parts of the work are taken up and discussed in detail and deductions made.

Most of the work done by these expeditions from Cambridge has been carried on in the old city of Copan, which is on the border between the republic of Guatemala and the republic of Hon-

duras; it is really in Honduras, midway between the two at an elevation of about two thousand feet, but you have to climb mountains five thousand feet high in order to get there from the west side.

The first account given of Copan was given by the American traveller Stevens, in 1839. Stevens was an American special agent, sent by the President of the United States to investigate the republic of Central America. At that time Central America was one republic. Mr. Stevens arrived there at a time when the dissolution of that republic had begun, when Carrera with his army of undisciplined Indians was overrunning the country, compelling the government to take refuge first in one state then in another. Stevens, arriving there in that situation, set out in pursuit of the government to which he was accredited, and during this journey he stumbled on the ruins of Copan. Stevens was so impressed by the few glimpses of the ruins that he had that he persuaded his companion, Mr. Catherwood, who was an artist, to remain at Copan while he pressed on in pursuit of the government, and make drawings of the monuments. Catherwood's pencil drawings of the principal monuments that were at that time visible, executed with marvellous fidelity, were included in Stevens's book, which was published simultaneously in England and America in 1840, and while it caused considerable interest and was widely read simply because of the charm of Stevens's narrative, his account of the ruins met with general discredit and misbelief. Stevens seemed to be able to believe that such remains lay buried in the forests of Central America.

In 1885 the English traveller, Alfred Maudslay, of Oxford, having to go to the tropics for the sake of his health, and having read Stevens's work and been interested in it, made up his mind to follow Stevens's trail and find out whether such a ruin existed or not. He was successful in finding Copan, where he remained long enough to make photographs and moulds of the principal monuments. It was only then that a general interest was awakened in the scientific world concerning the ancient ruins of Central America.

Without entering into any detailed description of the ruins, which would necessarily be incomplete and rather perfunctory, I will endeavor to give you some of the impressions made on my mind while I sojourned among the ruins of Copan. W

first expedition from the Peabody Museum (Owens and Saville) arrived, in 1890, the ruins were found buried in an impenetrable thicket, which had obliterated all traces of Maudslay's clearings. Roads had to be cut in order to reach them, and then clearings had to be made in the dense tropical jungle, in which one is so oppressed that it seems impossible at times to breathe. It was not until several months had been spent in the cutting of the forests and clearing the ground that any conception at all could be had of the appearance of the ruins and their general character.

After the forest was cleared off, the first thing that became apparent was the evident strength and magnitude of the structures, and one began to realize the enormous time-element which they represent, not only by the ages during which they have stood, attaining an antiquity which makes the memory of man seem insignificant, but by reason of the long, laborious process, the outcome of which was the mass of architectural marvels, with its extraordinary elaboration of ornament, its intricacy of design, where the strange interweaving of unintelligible motives baffles the eye and the imagination as well. When we consider that all this work was executed with no better tools than flint chisels, it really seems marvellous, and brings home to us the feeling that the old Mayas were a people of infinite patience and perseverance, in addition to being possessed of an artistic instinct of a high order. Everything pertaining to these ruins is so strange and unfamiliar that the experience is like what one might expect upon being transported to a different planet where there are beings with an entirely different set of mental faculties, who have different ways of thinking and acting, and living a life entirely different from ours. And yet once in a while I would come across a little touch of human nature, such as evidence of the love of personal adornment, which reminded me that, after all, this human race is all akin and that the distinctions between its different branches are not so very wide. Still the pervading spirit of the place was one of profound mystery, a mystery made all the more impressive by the silence and desolation that surround these perishing relics of a barbaric pomp and splendor unsurpassed anywhere in the world's history.

The problem suggested to the mind on inspection of the ruins is the problem of the inscriptions. There stand the monuments and the temples, on whose walls are carved what, in all probability,

is the history of the people, and yet we cannot read it. Several attempts have been made to work out a key to this system of glyphics, but none of them have been of any use whatever. We have tried it by analogy with the Egyptian system, but without satisfactory results. Others have tried to assign a phonetic value to each element of the hieroglyphics, according to a suggestion in the form, or according to their own fancy, but the so-called keys obtained in this way were found to be inapplicable except by the inventor. Numerous other very ingenious keys have been worked out, and we have heard it announced from time to time, and emphatically that a key had been discovered which will unlock the whole mystery of the inscriptions. The only way in which a clue can be arrived at is by a careful comparison of one inscription with another, and of one element in each inscription with the other elements. We have, as a starting-point in this problem, the hieroglyphics, the records handed down by the early missionaries in Yucatan, who, while they destroyed the documents they found among the natives, have given us the meaning of the symbols found among the Indians still living. These symbols were the names of the days in the month, and it has now been proved that these characters in use among the wild tribes, that Bishop Landa and his contemporaries in Yucatan, were the same signs used in Copan and all the other ancient cities. Taking that as a starting-point, this much progress has been made: that we are enabled to read the inscriptions as they apply to chronological records, and sometimes, even when the matter concerns astronomical calculations, it has been interpreted, although there is not a sign or inscription of which it can be said that we know the meaning of the whole.

Every long inscription begins with a date, recorded by means of a chronological system that was really remarkable in its perfection. The length of the year in the annual calendar was three hundred and sixty-five days, and it appears that the astronomers were perfectly well aware of the extra fraction of a day which had to be accounted for in order to make the count right. That was the annual calendar. The chronological calendar was different. In keeping chronological records extending over long periods of time they adopted a different year, a year of three hundred and sixty days. This must in the first place have led to some confusion, having an annual calendar of three hundred and sixty

days, and in the chronological calendar another period of three hundred and sixty days, and it would appear as though the astronomers and mathematicians were very much exercised over the problems involved, and in trying to work the two systems and get them to work harmoniously, they incidentally worked out a really remarkable system of mathematics, and at the same time developed, to an astonishing degree, the science of astronomy.

The time-count proceeded by periods of three hundred and sixty days up to a period of seven thousand two hundred days. After that there was a longer period of one hundred and forty-four thousand days, according to the vigesimal system, which is at the basis of the numeral system of the Mayas as well as that of the Aztecs. It is now generally recognized that there was another much longer period, which would give to the time-count an extraordinary length and place the starting-point far in the past, but as there is still some doubt as to the part played by this period I will not discuss it any further. It is enough to say that the earliest and latest dates, recording, as we believe, the dates on which certain monuments were erected, are about two hundred years apart. This period would of course correspond to the latest period of constructive activity, and is a small part of the period during which the city flourished. There are two reasons for this conclusion,—first, the characters on the earliest monument are as fully developed as those on the latest, and secondly, our excavations have revealed the fact that below the foundations of these later monuments are the remains of older and cruder structures, and there is evidence that these older structures are not in one layer only, but in several layers, corresponding to different periods or eras of occupation. It should be mentioned that the Maya chronology has not yet been brought into touch with our own, so that the dates give us the relative and not the actual age of monuments.

I have not time to enter into a more detailed description of the inscriptions and the system of hieroglyphics, and the attempts that have been made to interpret them. But I may say this: that the results already attained give good ground for belief that in the near future the whole system will be worked out, and that there will be no more mystery about the inscriptions of Central America.

Next to the inscriptions on the walls and monuments, it was the tombs that seemed at first to offer the greatest chance of fur-

nishing material that would help to illustrate the life and customs of the people, their religious beliefs, and their social organization. It was also hoped that manuscripts might be found in the tombs, for it is well known that the Mayas had books printed by hand on paper made from maguey fibre. As a matter of fact, the tombs contained little except the teeth of the occupant. In almost all of them there were beautiful funeral urns, which, however, contained nothing. There were also bone carvings and jade ornaments which had evidently been worn by the dead at the time of burial. If manuscripts were placed in the tombs they had entirely decomposed.

Perhaps the most interesting ethnological fact revealed by the contents of the tombs was that furnished by the teeth. It is a curious thing that the teeth, which in the living body are a part most subject to decay, last, after we are all dead, when no other trace of the body has disappeared. The interesting fact about the teeth from the tombs at Copan is the fact that they were set with jewels. Now, there is abundance of evidence that the inhabitants of Copan were vain and fond of personal adornment. What you find on the walls of the temples and on the sculptured monuments is not, as might be expected, intended to depict the exploits of warriors or the pomp and circumstance of war. There are no processions with martial accoutrements or the spoils of victory. Such things seemed to be unknown and foreign to the interests, and in place of this you see personages posing in apparently no other object than to display their wonderful ornaments and richly worked attire. So, also, we see by the remains in the tombs that they not only set jewels in their teeth, but also filed the front teeth according to some fashion prevalent among them.

It is altogether likely that this practice of setting jewels in the teeth (it was done with consummate skill) led to a profession similar to the profession of dentistry. I am morally certain that in that old city there were schools of philosophy and science, and there is no reason for supposing that they did not have schools of medicine and surgery.

The social and political conditions of the modern Honduras present a striking contrast to the conditions prevailing among their ancient forerunners.

The ethnological aspect of these people affords an interest

experiment in the mixing of races. It is only in a few of the more remote corners of the country that Indians of pure blood are found, and their numbers are small. There are no longer any Spaniards of pure blood. With the exception of the few Indians the population is made up of a mixture of Spanish and Indian, together with a strong Moorish element and an infusion of negro blood. Those optimistic dreamers who are wont to look with complacency on these United States as the melting-pot where the amalgamation of the most diverse ethnical elements is to be accomplished for the improvement of the human race, might do well to study the conditions in those countries where the process of amalgamation has already been accomplished. Governments change with a rapidity which baffles the historian. The warlike attributes for which we looked in vain among the sculptured monuments of Copan are conspicuously present. Liberty is a word that is stamped upon the coins and postage, and printed in big letters on the flag. Individual enterprise is confined to one branch of industry,—the making of revolutions. A man is spoken of as a good revolutionist as a man here is said to be a good debater or a good party leader. It is the only profitable branch of industry, because, if a man is a successful planter or miner, he may lose his labor and his property in the next revolution, whereas if he is a successful revolutionist, the other man does the losing. The majority of the people who really have no voice whatever in the government, except when they are called upon to serve as "volunteers," are a simple-minded and hospitable people, a people with few wants and these easily satisfied. Nature is generous and supplies all their wants with but little labor. One hardly knows whether to envy such people or to pity them. It is true that they are subject to great afflictions to which we are practically immune by reason of our superior knowledge, our science, our social conditions, and physical comforts, and yet it must be admitted that they are happier than we are. What suffering they have is entirely physical. Above all, they enlist the sympathy of the traveller by reason of their simple faith in his power over pain and disease. According to their firm belief, all foreigners are doctors, and a doctor is supposed to be able to dispose of all forms of physical infirmity as readily as the priest disposes of their sins in consideration of a piece of four reals. They seem to have lost faith in their own quack doctors, probably because they have

learned too much about their methods, but when the foreigner fails to fulfil their expectations, it is not because he cannot, simply because he does not choose, hence the whole problem consists in prevailing upon him either by prayers and entreaties or else by offers of material reward. The more unwilling you are to practise upon their ignorance and credulity the more earnest and pitiful do their entreaties and offers become. The traveller who takes some trouble to minister to the sick along his way, is not troubled for pains, because in return for a dose of medicine for a brother, sister, wife, husband, or child, all that they possess is at his disposal. I am glad to be able to say that I do not think I ever did them any harm by my practice among them, while I am sure that I was often able to do much good. The diseases to which they are most subject are fevers, which are owing more to the habits of life than to the climatic conditions. Usually all that is needed is a little soap and water, but after a long series of attempts to introduce this commodity among them I gave it up. I was too pitiful to see the look of disappointment on a woman's face when, in answer to her appeal for "remedios" she received a box of soap and was told to go and wash herself, whereas the gratification with which she received a packet of powders of the same sort was a real pleasure. Most of my operations were performed when called upon to extract a tooth, which happened not so frequently as one might think, considering that no care whatever is taken of the teeth. As a rule, the people of all classes have good teeth, which stay by them through life. Whether this is due to racial characteristics, to climatic conditions, or to peculiar habits I am unable to say. One thing is worth noticing in connection,—that all classes and both sexes of all ages use tobacco to a great extent. Nothing is more common than to see a person that has not yet learned to walk sitting with great composure on the ground, occupied with a big cigar, and gravely contemplating the world through a cloud of tobacco smoke; and old age is put out upon the same world through the same soothing medium.

Reviews of Dental Literature.

HISTOLOGICAL AND CLINICAL INVESTIGATIONS AS TO THE METHOD IN WHICH NITRATE OF SILVER AFFECTS CARIOUS DENTINE.

By Dr. Josef Szabó, Budapest.¹

The author gives a very carefully prepared history of the uses of nitrate of silver in dental practice beginning with the year 1846, and quoting leading exponents of the drug. He then comes to the question, What is its penetration power, and what is its chemical action on the fibrillæ? As to this power, there has been considerable divergence of opinion, some holding that it could not penetrate into the tubules, and others holding that this power was so great that the pulp might be endangered. Investigations as to the penetrating power of nitrate of silver have heretofore been made upon extracted teeth. The author, however, considers that extracted teeth may react differently with the drug than teeth which are in the mouth. He, therefore, makes his experiments upon living teeth. A right and a left lower first molar having a crown cavity is selected. The rubber dam is adjusted, and the cavities are dried out and excavated as far as possible. The nitrate of silver is then applied in different forms,—viz., in powder, as a ten, twenty, thirty, and forty per cent. solution. The applications were made five, fifteen, eighteen, and twenty-five times. After the experiment was performed the tooth was extracted and examined under the microscope. Pictures are given of some of these examinations, and show clearly the penetration of the drug when in contact with living dentine. "Without regard to the concentration or method of use, we find the same result. The carious dental tubules are filled up to a certain depth, with a coarsely lumped contents." According to these observations the tubules are affected only to a certain depth; when this is reached further applications of the drug cannot force it deeper.

¹ Histologische und klinische Untersuchungen über die Wirkungsweise des Argentum nitricum auf das ehrranke Dentin. Von Dr. Josef Szabó, Österreichisch-ungarische Vierteljahrsschrift für Zahnheilkunde, Jänner, 1902.

The infiltrated dentine layer was about one-half millimeter thick. A deeper penetration could never be observed, even though the most diverse solutions be used.

In regard to the question as to how nitrate of silver acts on the contents of the dentinal tubules, there is this explanation given: "The living albumin is changed, under the action of silver salt, to dead albumin. The plasma is changed from a soft condition to a solid mass. The albumin unites itself in the formation of a precipitate with the metal of the silver salt. The finely granular albuminate of silver is easily recognizable under the microscope, and shows its characteristic properties. Under the action of light it becomes dark, then black and insoluble."

The author, in concluding, says that he must agree with Hoffmann that nitrate of silver has a relatively slight power of penetration and does not act deeply enough to endanger the vitality of the fibrillæ.

WILLIAM H. POTTS

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY

A MEETING of the Institute was held at the office of Dr. O. Kimball, No. 27 West Thirty-eighth Street, New York, Tuesday evening, January 7, 1902, the President, Dr. J. M. Howe, in the chair.

The minutes of the last meeting were read and approved.

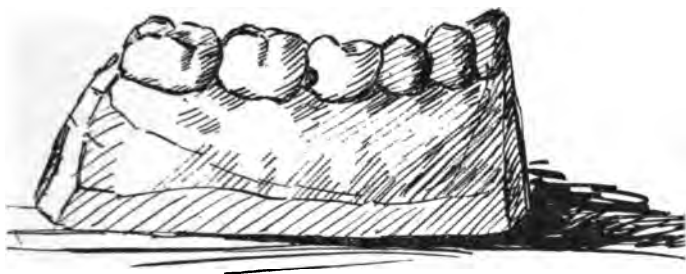
COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. E. A. Bogue.—In view of the difficulty of making apical amalgam fillings the exact shape of the portion of tooth which are intended to replace, I have for several years adopted a method of insertion which my friend, Dr. F. Milton Smith, has encouraged me to present at this meeting.

In the first place the space between the natural teeth is wider at the gum than at the point or line where the teeth are in contact. (Fig. 1.) In order to insert my amalgam fillings

the least possible delay and the greatest possible accuracy I have had constructed a number of steel blades like the end of a pen-

FIG. 1.



knife blade or small lancet. These lancet ends are like the model herewith presented. (Fig. 2.) In form, thicker at the back and

FIG. 2.



also at the heel, so that when the blade lies between two molar teeth, for example, with the butt end towards the lingual side and the thinner end towards the cheek, the edge towards the grinding surfaces of the teeth, it will just about fill the natural space existing between two adult molars. Not wishing always to cut away the grinding edges of teeth, or even to cut into them, I first wedge the teeth apart gently, using for this purpose the so-called grass line, which was exhibited and described by Dr. Davenport a year or two ago. A loop of this grass line (or twisted silk, as it is in reality) is drawn between the teeth from the buccal side towards the tongue by means of a floss-silk, which has been passed between the teeth and engaged in the loop, which is then drawn through between the teeth. (Fig. 3.) One end of the grass line is then passed through the loop on the lingual side (Fig. 4), after which the two ends are tied in three single knots on the buccal side of the teeth, drawing the double loop tightly upward towards the points of contact of the two teeth which are to be separated. This leaves a double loop of twisted silk between the teeth (Fig. 5), which gradually spreads with the moisture of the mouth and separates the teeth without falling out, hurting the gum, or causing much annoyance to the patient. This was my

FIG. 3.

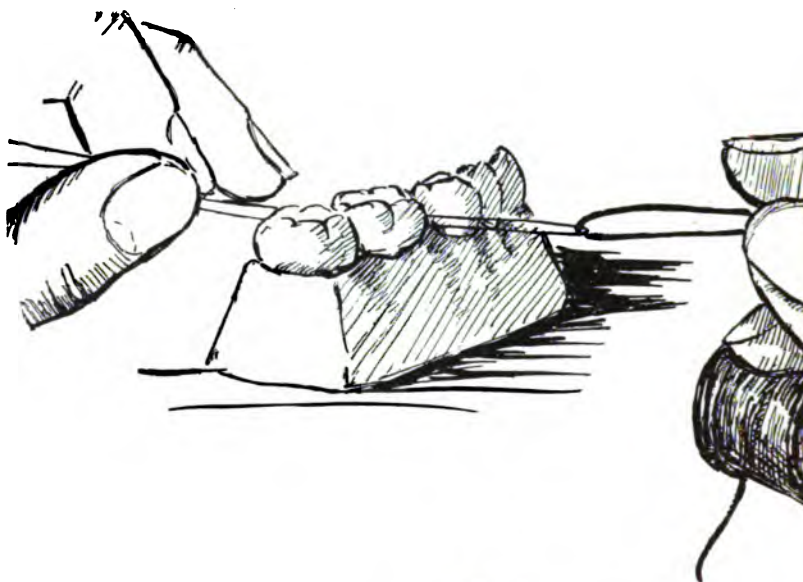


FIG. 4.

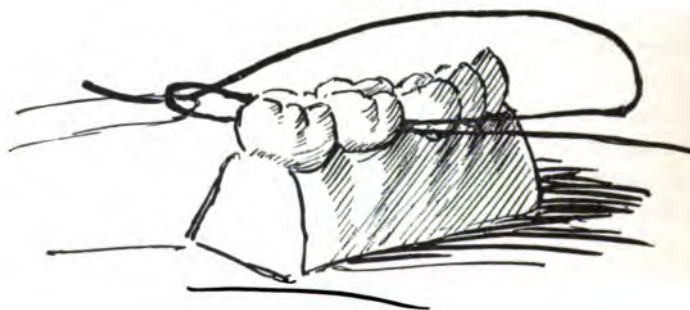
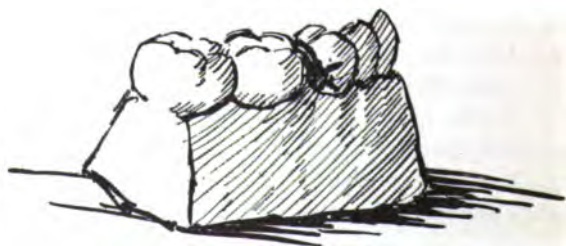
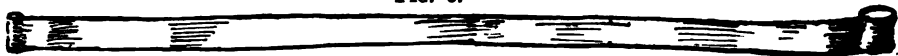


FIG. 5.



first step in the present instance. Having obtained the necessary room, I placed the rubber dam with a clamp over the second molar and stretched it forward over tooth after tooth until the dam covered all the lower teeth on this side as far as the lateral incisor. The edges of the dam being turned towards the gum by means of a floss-silk slightly soaped so that it would not stick to the dam, I placed a separator over the molar and the bicuspid which was to be filled. The cavity was a large posterior approximal, having a pretty wide semilunar opening towards the tongue and a similar one towards the cheek. Using warm alcohol first and cocaine and carbolic acid afterwards to allay sensitiveness, I excavated and shaped my cavity in such manner as to admit of the insertion of my filling from the buccal side. When all was ready my assistant weighed out my amalgam fillings with the necessary amount of mercury, while I arranged the matrix for the filling in this fashion: I first put my lancet blade between the teeth, with the point towards the cheek and the butt towards the tongue. I next took a metal polishing strip with a roll at the end (Fig. 6), such as we used to find ready made in dental depots.

FIG. 6.



Placing this between the teeth, just in front of my lancet blade, I drew it gently towards me until the roll on the end of the polishing strip touched the head of the lancet blade, holding the latter in position. I then took a small piece of thin steel, previously cut out with scissors (Fig. 7), and laid this between the polishing

FIG. 7.



strip and the tooth to be filled, practically covering the whole cavity and somewhat more with the steel. (Fig. 8, A.) Now, by drawing firmly on the polishing strip I had a curved matrix towards the lingual side of the tooth, the matrix was held closely in position at the neck of the tooth by the lancet blade, which was thick at that point, and farther up towards the grinding surface the lancet blade, polishing strip, and steel were sufficiently loose to be pushed back from the cavity by the excess of amalgam as I placed it in position. My amalgam, having been mixed and made

into small blocks, was handed to me, and piece by piece worked to its place, a wad of tissue-paper being placed between instrument point and the amalgam. When my cavity was the polishing strip was turned towards the front of the tooth and drawn tightly against the tooth, the steel strip being between it and the amalgam. (Fig. 8, *B*.) This brought the amalgam to a nearly cylindrical form, leaving a little surplus toward the upper part of the cavity, which was near the grinding end of the tooth. I cut away with Dr. Kimball's oblique lancets what surplus exuded. I absorbed, with freshly annealed soft gold leaf, all surplus mercury that I could and then removed the matrices in the following order. The lancet blade was first pushed backward into the mouth; the polishing strip was next removed, taking care not to disturb the thin steel that lay between the amalgam. After this the thin steel was removed, and with a thin silk ribbon, or very thin cotton tape, I was enabled to polish this filling into shape, removing all overhanging edges, finding myself with a contour filling that completely restored the original shape and rounded tuberosity of the tooth, and accomplished with a certainty and despatch as agreeable to the operator as must be gratifying to the patient.

By absorbing the mercury as I did, my filling was sufficient to set to maintain its form perfectly, though no further precautions were taken to protect it other than to counsel the patient to eat upon the other side for the next two meals.

I have another matter to present, in which Dr. Day encourages me. It is a method that I have used for over twenty years in cases where the teeth were greatly broken down.

The model which I hold in my hand represents a case presented a few days since, where the entire crown had been broken off, leaving the roots filled and in healthful condition. (Fig. 9.) I drilled into each of these lower molar roots nearly one-fourth of an inch and inserted a heavy gold screw into each, drilling the screws off about on a level with the adjoining crown. A platinum lined gold ring (thickness 32-gauge) was then cut of just the circumference of the roots (a thin copper wire had been passed around the roots and twisted tightly in order to find this exact circumference). The ring, being of the height of the crown which was broken off, was slightly contoured into shape by bending-forceps, was placed in position and pressed down upon the remnants of the root quite forcibly, and the mouth

been kept dry by cotton rolls and napkin, the ring was filled with amalgam, which engaged with the threads of the screws on the one side and the contouring of the upper part of the ring on the other, and made once more a solid tooth, with cusps and indentations very much like nature in shape. (Fig. 10.) If the opposing

FIG. 8.

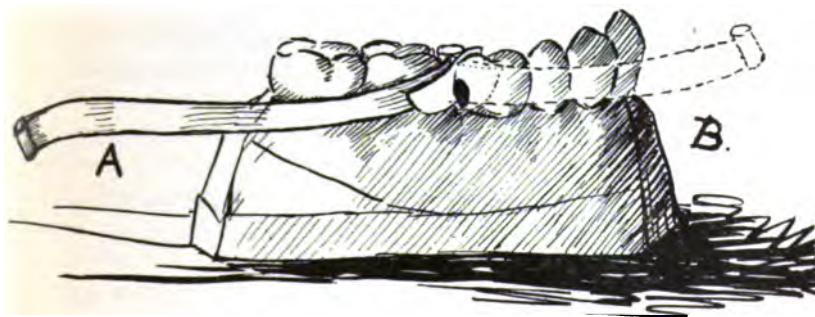


FIG. 9.

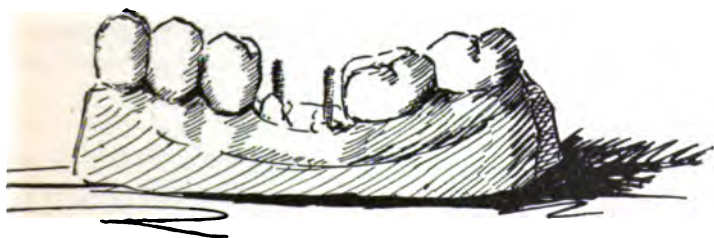
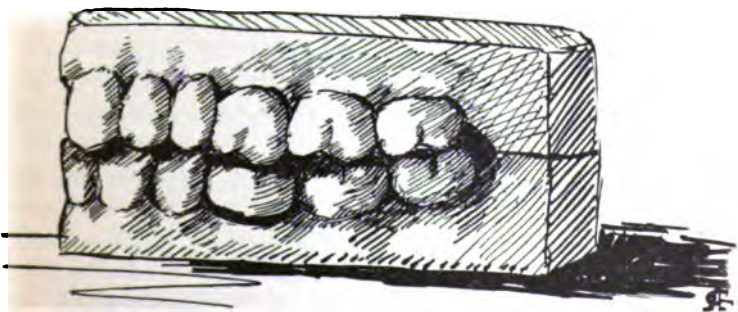


FIG. 10.



teeth can be bitten into this amalgam, so as to get the exact length and shape desired, and the surface be then finished by absorbing all surplus mercury by gold pellets, as before mentioned, a frosted surface is left, which is very little noticeable in the mouth. The model now exhibited shows the operation when completed.

The last thing to which I will call the attention of the tute is a method of treating an abscessed tooth, which it is sary to fill without much preliminary treatment. A patient obliged to sail for Europe last Saturday. In order to save from being troubled with a tooth so hastily treated, I placed a of tapered copper wire in each root. I then filled the cavity gutta-percha, and after the filling was completed withdrew wires, thus leaving a small opening into each root to allow escape of any accumulations, gaseous or fluid, which might sequently form.

Dr. Robinson.—I should think the gutta-percha fillings pack down and close these openings up.

Dr. Bogue.—I trust eventually that it will, but they will bly remain during the week that the lady is crossing, especially as the orifices are on the buccal side of the tooth.

Dr. Chas. O. Kimball.—I wish to offer the especial thanks the Executive Committee to Dr. Bogue for bringing these cases before us to-night. I wish, speaking again for the Executive Committee, that the members would make it a habit to come every meeting with something of practical utility. It is things that are helpful to us and, through our report, help the profession at large.

The President.—The invitation of the Executive Committee will, we hope, be borne in mind, and that members will come with ideas of a practical nature.

Dr. Gillett.—Regarding the method explained by Dr. Bogue of leaving a small vent in a gutta-percha filling, for many it has been my habit, when dressing doubtful pulpless teeth, to puncture the temporary stopping with a small point. This opening provides an effective vent, but is not easily penetrated by the fluids of the mouth.

Dr. Kimball read a review of Dr. Talbot's paper by Dr. Newkirk.

A SHORT REVIEW.

BY GARRETT NEWKIRK, M.D., LOS ANGELES, CAL.

Readers of the *Dental Cosmos* for the last ten years may remember a review published in the December number, 1892, of a series of papers entitled "A Study of the Degeneracy of the Human Race," by Dr. E. S. Talbot.

After nine years the present writer feels impelled once more to review a paper of similar tenor, read before the Chicago Medical Society, February 13, 1901, and published in the *INTERNATIONAL DENTAL JOURNAL* for the following November. The title of the paper is "Interstitial Gingivitis as a Prominent Obvious Early Symptom of Autointoxication and Drug Poisoning."

The author will pardon me, I hope, for saying that, while the title represents undoubtedly much study, the paper as a whole and in detail seems to have been hastily written and put forth without careful consideration of the statements contained.

To begin with a minor criticism, it seems to this writer that the term interstitial gingivitis is not as a whole desirable. Gingivitis is inflammation of the gingiva or gum. Interstitial gingivitis, therefore, is inflammation of the interstitial gum,—i.e., between the teeth. This implies the existence of a gingivitis strictly localized, leaving the lingual, labial, or buccal parts unaffected, a condition rarely found.

"Autointoxication" is perhaps allowable as a medical term. It means, if anything, just this: a poisoning of the body by its own waste products. The idea is old, but the word has the disadvantage that it calls for a special definition of the popular word, intoxicate; and certainly it is better to avoid all needless confusion of the President's English.

Coming to the article itself, one has to admit that it contains here and there statements of truth which no one would question as to the results that follow from faulty elimination. Along with these, however, are others, some half-truths perhaps, others wide of the mark or distinctly erroneous. It does not matter so much when faulty statements occur in the writings of an inconspicuous man, but in those of an author of text-books, who has been a recognized leader and teacher for many years, it does matter, and that seriously. Utterances coming from such a source are accepted by many without question, especially among younger readers, and, if wrong, become in their thinking as tares among wheat. In the first paragraph of the paper we find the following:

"The sweat-glands perform their function normally in the summer, but with the first breath of cool weather the glands contract and the liver and kidneys are forced to perform the work of the skin. Autointoxication takes place. The skin of the fingers begins to peel and itching with eruption results."

Verily, this is not in accord with the experience of people generally in any latitude where seasons come and go. Even in Southern California we can hardly escape "the first breath of cool weather," which comes down from the Sierras with murderous intent. Yet, strangely enough, we welcome it. The sense of new life, the exhilaration, may be only (auto) intoxication; we're happy, and "peel" only our thinner underwear. But we never should decide to have an eruption on the first breath of B. desquamation would follow and not precede the other condition.

Next: "In health, autointoxication is never noticed after the periods of growth are complete."

We suppose the author must mean that poisoning by waste products (autointoxication) is "never noticed" till boys and girls have become fully developed men and women. If not, what does he mean? Now, if this were true, they would never get sick; none would die except by violence. But the fact is that poisoning by waste products, as the result of faulty elimination, may occur at any time. It is doubtful if any child grows up entirely free from it.

"In health." If we have autointoxication in health, it must be a normal condition and not pathological.

"Foods taken into the system are appropriated up to a certain period." What period? Periods of growth?

And further: "The amount of food required depends on waste and repair. This depends to a great extent on the avocation of the person. The older the person, the more effete matter needs removal."

About half true this. He means vocation, not "avocation." A man's vocation is his regular work. His avocation is something set aside, like the gardening of a doctor, or the honest toil of a political delegate. It is not necessarily true that "the older the person the more effete matter needs removal." The reverse may be true; usually is true. It is the instinct of man to conserve his strength; to move more deliberately, to undertake less, as age advances. A young man runs for the train, perspires, with a flushed face and a palpitating heart. His father knows better, starts earlier, or waits for the next train, thereby keeping much fibre from becoming "effete."

Speaking of the first alveolar process, the writer says,—

"When these [the deciduous] teeth are lost the process

sorbs" [meaning is absorbed], "but it reappears on eruption of the permanent teeth."

Now, the truth is that the process develops, expands, to accommodate the incoming guest, and is absorbed only as to the doorway by which he enters, the way by which the other departs. There is simply a new accommodation of bone. If a deciduous tooth be lost and the process is fully absorbed, the indication is positive that the permanent tooth is missing.

"The alveolar process simply holds the teeth in place while they are being used for mastication." May we not add, between times?

The following statements are so peculiar, both in matter and construction, that I beg leave to use italics:

"Absorption of the alveolar *process* is an inflammatory *process*. I have entitled this inflammation interstitial gingivitis, . . . *therefore*, the alveolar process as well as the gum tissue is involved."

Why "therefore"? Is the *process* "involved" because the "inflammatory process" has been named by him, or because "absorption of the alveolar *process* is an inflammatory *process*"? Or is it because the process proceeds by some unknown process?

To the author's statement, that "absorption of the alveolar process is an inflammatory process," we demur. One may lose a portion or all of an alveolar process without pain, increase of temperature, redness, or swelling. It is no more inflammatory than absorption of the deciduous teeth, or the substitution of bone for cartilage. The author has just stated, only two paragraphs distant, that it is "easily absorbed" and "the most transitory . . . of any structure of the body." How then is "absorption of the alveolar process" an "inflammatory process," which "I have entitled interstitial gingivitis"?

Immediately following in this *procession*, we come upon an indictment of modern dentistry which would certainly be remanded by the court to any lawyer for correction of terms.

"Modern dentistry is doing most to produce local irritations resulting in predisposing causes: the application of the rubber dam, clamps, wedging of teeth, correcting irregularities, sharp edges of decayed or filled teeth, crown- and bridge-work, artificial teeth, more particularly ill-fitting plates, over-stimulation in the use of toothpicks, injuries, tartar, accumulation and decomposition

of food, tobacco, and everything of a foreign nature that will produce irritation."

Is this a right use of terms? What is a predisposing cause? Does the immediate or active cause precede the predisposing cause? Not since the first dictionary, surely. It is true, no doubt, that in modern dentistry specialties have developed with much division of labor and many added responsibilities, but is it fair to include among these the effects of tobacco, toothpicks, tartar, fermentation of food, and "everything of a foreign nature that will produce irritation"?

"Local causes, which are easily recognized and can be handled only by a dentist." Do we "handle" causes?

It might be interesting to know how many readers and hearers of the paper had any definite idea of the meaning of the following sentences: "Interstitial gingivitis produces four forms of absorption,—lacunar, or osteoclast, halisteresis, Volkmann's perforating canal, and osteomalacia, or senile absorption. Halisteresis and Volkmann's perforating canal absorption are nature's the most common, since they are directly due to the inflammatory process and are likewise more rapid in their action. Lacunar and osteoclast absorption is nearly always present, but is slow. Osteomalacia or senile absorption is a natural process and attacks the individual sooner or later. Interstitial gingivitis is recognized by puffiness and bleeding of the gums."

The introduction of these for the most part unfamiliar terms and the attempt therewith to make four divisions out of simple alveolar absorption, seem to the reviewer extremely fanciful. It may not be, but it looks like, pedantry.

Volkmann's canals are defined in a late medical dictionary as "Passages in the subperiosteal layer of bones, connecting the Haversian canals." The latter being given as, "Canals in the compact structure of bone, establishing connection between the medullary cavity and surface of the bone," they can have no existence in a cancellated structure like the alveolar process. If absent, they should not be dragged in.

"Halisteresis," according to different lexicons, means deficiency or loss of, mineral salts. As our eminent friend G. C. might have said, "It is a condition and not a theory." Difficult to imagine, we should think, an alveolar process reduced to cartilage by loss of its lime.

The fourth division, he says, is "*Osteomalacia*, or *senile absorption*." We should think this a misprint were it not reiterated. And he goes on to state that it is "*a natural process*" which "attacks every individual sooner or later." By this we are told that *rickets*, a disease of early childhood, characterized by non-development of the bones, a disease of malnutrition, is one with *senile* (old age) absorption. And it "*attacks*" us all in due time.

A man who was sea-sick and sure he would die asked a friend to take charge of his remains; an hour afterwards he said, feebly, "John, you needn't mind, I don't think there'll be any remains."

Now, if we are to be "*attacked*" by a "*natural process*" of senile absorption, all the way from infancy to old age, the wonder is that any of us have remains.

Having shown that "autointoxication takes place" with "the first breath of cool weather;" that "in *health*" it "is never noticed until after the periods of growth are complete;" that autointoxication is inevitable in elderly people because they have more effete matter and less excreting power; that autointoxication is the cause of gingivitis; that modern dentistry is mostly responsible for the predisposing causes of gingivitis and produces four different kinds of absorption of the alveolar process, including the softening of children's bones, or senile absorption, "which is a natural process," the author adds that "Pus infection frequently takes place," and "the resulting products are taken into the stomach, producing indigestion." "Treatment consists in the patient's drinking eight or more glasses of pure water each day, in brushing the gums with a stiff tooth-brush three times a day, thereby causing them to bleed, and the employment of proper mouth-washes. Tincture of iodine should be used upon the gums and alveolar process every other day until they are restored to health," or, we presume, till the process is lost by rickets or senile absorption.

It is not easy to bring ourselves to consider such "treatment" seriously. What has become of the great mountain, autointoxication? All the remedies except water are directed to the "symptom," the local condition. Is the water given for the purpose of diluting the products of pus "which are taken into the stomach, producing indigestion," or for the dilution of pus or of gastric juice, or for an aperient or diuretic?

These cases of pus with loosening of the teeth we have studying under various names,—pyorrhœa alveolaris, phagopericementitis, etc. We have thought that out of our observation and experience we had learned a little something about them, and it would appear not. There is evidently no relation of the dental membrane, no removal of deposits from the roots of the teeth, no special local treatment worth mentioning except by fumes and iodine. The correction of malocclusion, the support of loose teeth by mechanical means, are not to be considered.

Whenever "interstitial gingivitis is recognized by puffiness and bleeding of the gums," with "pus infection," we are to proceed with local irritation and internal hydropathic treatment. The reviewer understands by the words written.

Dr. Kimball.—It seems but fair to Dr. Talbot to state that after reading his paper carefully, and then Dr. Newkirk's review, the Executive Committee recognized the fact that Dr. Talbot's was a serious paper, in which he had something to say, and that this review of Dr. Newkirk's is a pleasant way of attacking the surface peculiarities of the paper rather than the matter. They decided, however, to admit it, mainly in the hope that it might serve to make good men and true more careful of the outward form of their papers, lest that which is good in them should be rendered, by haste or carelessness in preparation, obscure or even absurd. Accordingly this review of Dr. Newkirk's was sent to Dr. Talbot, asking him if he would not come forward and discuss it, or at least write a reply to it. The committee then received the following letter from Dr. Talbot.

"January 3, 1881"

"DEAR DOCTOR,—Your letter and Dr. Newkirk's paper have been duly to hand. I regret that it will be impossible for me to attend the meeting. The critique of Dr. Newkirk is one that would not be accepted by any medical body, since it displays marked ignorance of medicine, modern pathology, and philology, the two sciences in which the author poses. Autointoxication, for example, is a Greek, and of necessity indicates a poisoning (toxis). Some writers insist that alcoholic intoxication should be employed in place of Dr. Newkirk would order intoxication used alone. Since the whole medical profession the world over, as well as a large port-

the dental, has adopted autointoxication and employed it in the way I have done, it is senselessly futile at this late day for Dr. Newkirk to sweep (Mrs. Partington-like) the ocean of truth with his rather incoherent intellectual broom. I should also advise Dr. Newkirk to take a much-needed course under a pathologist and bacteriologist, judging from this and preceding lucubrations. A course in modern physiology is likewise imperative. Until this is done, a discussion of the "Short Review" with Dr. Newkirk would be as absurd as one with an Indian medicine man.

"Very truly,

"EUGENE S. TALBOT."

The President.—We will now have the pleasure of listening to the essayist of the evening, Dr. George S. Allan, who will read us a paper entitled "Extension for Prevention."

(For Dr. Allan's paper, see page 311.)

DISCUSSION.

The President.—Gentlemen, you have heard Dr. Allan's interesting paper, and I am sure we have all profited by listening to it.

Dr. E. A. Bogue.—Dr. Allan asks the question, "Cannot these vulnerable points be safeguarded in some other way than by cutting them away?" Yes, by cleanliness. I regard the expression "Extension for prevention" as a catch-word designed to claim and hold attention. If it results in producing a more careful preparation of approximal cavities, it will have done a real service. If it is accompanied by the injunction to carefully restore the form and size of the normal tooth (not that of a defective or malformed tooth) at the region of decay, it will do a greater service still, for contouring or restoration fillings always accomplish a certain amount of cleanliness by their insertion. Therefore, restoration of contouring should always accompany extension.

This process of extension is applicable only to a certain proportion of operations,—viz., approximal cavities, and mostly in the grinding teeth, as I shall show. But while extension to the extreme limit of disintegrated or softened tooth-substance is necessary, I do not consider extension beyond that limit desirable in cases where the structure of the teeth is good, and cleanliness may be expected. For example, I have to-day seen seven fillings in-

sented by myself when I was a youngster, all of them in good order. Four of the seven are approximal cavities, yet in none of them extension practised beyond the line of decay, and in none of them do the cavities go rootward beyond the enamel margin. Cleanliness has always been inculcated, and been practised by the patient.

Another patient, about twenty-four years of age, was in yesterday, one of a family of four who have been all their lives in my hands, as have their father and his father's family of six children. Contouring and cleanliness have always been practised in these families, but not extension of cavities into sound territory. In none of the children, save one of these last two generations, has ever been lost a tooth or suffered from toothache while under my care. This one was a lady, older than myself, who suffered from rhœa before I ever saw her. After such an experience, I have not seen the young lady's bicuspid's after thorough wedging with composites or restoration fillings that do not show.

Dr. Black tells us that "extension for prevention is extension of the enamel margin, of a cavity of decay, from a line of greater liability to a line of lesser liability." Or, to change the phrase, it is "to cut the enamel margins from lines that are *not* self-cleansing, to lines that are self-cleansing."

Now, gentlemen, there are comparatively few patients who come to us possessing thirty-two teeth, and if they do not possess thirty-two teeth, or at least twenty-eight, allowing that the wisdom teeth have not yet erupted, we need not expect any of the roots of those teeth to be self-cleansing, excepting the rounded or tubercular portions of the teeth where the enamel is thickest. The reason is two-fold: First, extractions of teeth here and there leave remaining teeth in such positions that normal mastication cannot be performed; hence the friction that is presupposed in the argument by Dr. Black does not occur. Secondly, if it could and did occur, the substances generally eaten by people who come to us for dental services are mostly soft, well cooked, and lacking in the fibrous qualities that necessitate mastication and insalivation. The comparative cleanliness that would result from such a degree of friction as ought to attend the process of mastication is lacking. We therefore supplement it with the use of the brush.

Now for some examples: Two superior central incisors with cavities in approximal surfaces, both mesial and distal, probably

soft foil, and finished with flat or nearly flat surfaces. Attention was called to them by a minute examination, which resulted in wedging the teeth apart sufficiently to make a thorough exploration as well as to do what was required. The fillings were inserted twenty-five or thirty years ago, probably by Dr. Gunning, who in his day had scarcely a superior. Both fillings were found thoroughly compacted, smoothly polished, and in remarkably good condition considering the lapse of time. At the cervical margins of each of the two central fillings was a slight line of discoloration, which proved to be decay at the precise point where fluids, by capillary attraction, would lodge and remain.

A gentleman, the editor of a dental journal, quite lately has asserted that teeth are not more liable to decay just above the point of contact, but just *at* the point of contact. These two teeth are decayed just above. My own observations go to show that capillary attraction has much to do with drawing and keeping deleterious fluids in contact with those portions of approximal surfaces just removed from the point of friction, which is the point of contact. Had the cavities in these teeth been extended twenty-five years ago and then been filled just as they *were* filled, there is no question in my own mind but that we should have had cavities at this time occupying exactly the same relative positions as did these. If, however, these smaller fillings had been slightly contoured at the time of their insertion, to make them the exact shape of the perfect natural tooth, I think there would not have been a recurrence of decay, either with or without extension, because the two bulging portions of the fillings would have come in contact sufficiently far down towards the cutting edges of the teeth to have left space above the fillings large enough to be self-cleansing.

Second case: Mr. J. W. G., two years ago, June 14, 1899, came with twenty-six approximal cavities, thirty-three in grinding surfaces, and five buccal cavities, and had his first lesson in regard to the necessity of keeping particles of food and *débris* of whatever kind from remaining lodged between the teeth. He is a college student, intelligent and conscientious, and has striven to keep the teeth that were repaired two years ago in good hygienic condition so far as cleanliness goes. The necks of all the grinding teeth from just above or just below the greatest tuberosity to the gums seem not to have been reached by brush or silk, notwith-

standing these conscientious and intelligent efforts, while portions that originally decayed (and those approximal decay took from six to twelve years to attain the size they had when first saw them, he being eighteen years of age at that time) seem to have been well protected by the fillings and the subsequent cleansings. The first series of operations were done in June, three and a half years ago. No extension of whatever nature could reach the portions of the teeth that are now covered by that felt-like deposit that Dr. Williams describes as the accompaniment of decay.

These facts are brought forward in order that the advocacy of "extension for prevention" may express themselves more fully for the sake of those who might otherwise take only a partial view of the subject. Let us advocate the "Prevention of extension by cleanliness."

Dr. Gillett.—As a student, long before I ever heard that there was such a man as Dr. Black, I was taught that the ideal filling for an approximal cavity was one that should expose the cervical margin of the cavity to natural friction, and that it was a good plan to place the cervical margin of that filling to go under the gum. I was also taught that there were many instances in which that ideal could not be attained. None of the discussion that has taken place since has materially changed my conception of this subject. In many cases I extend cavities, and even small cavities, for the reason that I feel the owner of the tooth will have it longer and will find it a more useful tooth.

I doubt if the gentlemen who have been quoted to-night, with the possible exception of one (I am not sufficiently acquainted with his methods), once in a thousand times make such extension in a bicuspid as Dr. Allan drew on the board. I feel that much of the disagreement over this subject grows out of misinterpretation of the statements made by the advocates of the two methods. Those who have advocated extension for prevention have had in mind certain conditions at one end of the line,—for instance, cavities in the mouths of patients who do not keep the teeth clean and who cannot be persuaded to do so,—and with these cases in mind they have sometimes made general statements to which themselves have noted many exceptions. Others with minds concentrated upon conditions standing quite at the other end of the line have repeatedly argued as if the advocates of extension

variably practised the method. None of the publications of the so-called "Blackites" have given me any such conception of their procedures as that which seems to be in Dr. Allan's mind. I wish time allowed me to quote one paragraph from Dr. Perry's paper already referred to, but I think I can state it fairly. Dr. Perry stated that he felt great hesitation in discussing such a subject, even with time for preparation, because of the probability of misunderstandings, and suggested that if we could discuss such matters with the cases before us for actual examination and comparison, there would be many revelations as to one another's opinions. We are very prone to misunderstand written descriptions.

Dr. Allan's suggestion, his other remedy, is a very good one, but with what proportion of our patients can he apply that remedy? It depends somewhat upon conditions, but most of the men in this room have about one grade of practice. Now, I think there are very few of you who have not a certain proportion of patients whom you simply cannot get to clean their teeth. You have patients who have never cleaned their teeth properly, and who do not know what a clean tooth is. On the other hand, you have many patients who do average cleansing, and you have a few whom you are proud of because when they first came into your hands they did not know what cleansing their teeth meant, and you taught it to them; and you have done the best work you will ever do, in teaching them to properly cleanse their teeth. It is along this line that we should work, but while we are reaching out for the goal, prevention by cleanliness (which will not be reached in this generation), we have got to do something else, the best we can with the means at our command. At that Second District meeting ridicule was too often substituted for argument. It is becoming quite the thing to call some of our Western friends "tooth jewellers," but I doubt the justness of the epithet. They have certain ideas which are correct and worthy, and they are doing good with them and seem to me to state their reasons clearly. These ideas carried to extremes like other good ideas will work mischief.

I was rather interested to note that Dr. Allan first found nothing new in this method, and then he calls it an entirely new departure. The fundamental ideas of extension for prevention have been taught for at least twenty-five years. Dr. Black has systematized them, and has most ably presented the reasoning on which

the practice is founded. I consider his general statements cally unimpeachable as such when considered with their c My understanding of Dr. Black and his followers leads consider the position which Dr. Allan and some other impute to them to be much overdrawn.

Just so long as the personal equation exists in both and operator, will the judgment of the latter be needed to mine the amount of extension required in a given case. down a *rigid* rule of practice in this matter is impossib useless. To state a *general* rule and the reasoning on w is founded is wise and helpful, and it is just this assemb the best thought of the best teachers for generations into a monious system and clear statement of the reasons that Dr. has accomplished in the particular field to which to-night cussion is limited. The working of the rule must alw modified by that judgment which can only be acquired by work and thought at the operating-chair, by the age of the p present condition of the teeth and adjacent tissues, clea of patient's habits, probable influence of the operator in in cleanliness, periods of probable opportunity for watching and by many other factors.

Dr. T. E. Weeks.—I feel hardly equal to discussing this as I have had no opportunity of seeing it; in fact, I only yesterday what the paper of the evening was to be about. Gillett has expressed almost all that I would say in regard I was very much amused by, and at the same time appr very much, the retort of Dr. B. Holly Smith when he quoted ham Lincoln's story that a soldier's legs should be long to reach from his body to the ground. It seemed to me to the situation pretty well. I was very much amused to no several of Dr. Allan's quotations seemed to refute the p was trying to make. The trouble is that we look at the from different stand-points. There is a great deal of tr the statement made by Dr. Gillett that you here in the E dealing with a different class of cases from those with we in the West are dealing. Now, as a matter of fact, I see a great many cavities like those Dr. Allan has depic us on the board. Consequently, gentlemen, I think if yo to see the operations coming from my hands you would thi I was extreme.

I think if you will read the context in Dr. Johnson's book you will find that Dr. Allan hardly read enough or with the right emphasis. I know what Dr. Johnson believes, and I certainly think a different meaning was implied if not expressed in the context.

(Quotes from page 83, Dr. Johnson's book.)

I would say, gentlemen, that I am a "Blackite," but I am not an extremist; neither is Dr. Johnson, and I do not consider Dr. Black one. What we are trying to get at are the true principles that underlie the salvation of the teeth. We in the West believe in cleanliness, and we do not believe in extreme measures except when they seem to be absolutely necessary. It all becomes a study as to how much of the tooth to cut away to give the greatest strength to that portion which remains, and to give shape and contour to the resulting surface; how much to cut and how to cut to leave the enamel margin so that it will not fritter away or break down *en masse* under the strain of mastication. All must be taken into consideration. As Dr. Gillett has said, what Dr. Black would like to have credit for is the systematizing and the attempt to reduce matters to primary principles. I think there will not be much profit in these discussions until we can reach some common basis and look at the picture from the same stand-point.

Dr. Gillett.—I want to express my agreement with Dr. Allan's remarks regarding sloppy work. I feel that one of the things that should be impressed upon the younger practitioners is that, regardless of extension, a filling is a failure if not mechanically perfect to begin with.

Dr. S. E. Davenport.—It seems to me that there is one point of great importance in this question which has had too little attention, and that is the matter of contouring. If small approximal cavities are prepared without being extended much beyond the zone of actual decay,—I care little what material is used, so long as it is one that has proved to be fairly durable in that particular mouth,—care being taken to shape the fillings so that they will present but a small point of contact either with the filling in the adjoining tooth or with the tooth-structure itself, such fillings will be very durable in mouths of average cleanliness. It has seemed to me that papers and discussions upon this subject have given too little attention to this point of proper contouring.

Dr. F. Milton Smith.—I was delighted to hear from Dr. Weeks to the effect that we in the East have misunderstood our Western

friends. I have had an opportunity to see, within the past few weeks, an example of as magnificent work as I have ever seen in my life. It came from the wild and woolly West. I wish that some of us here in the East knew how to do as well. If we could save the teeth of our patient's better.

It seems to me that Dr. Gillett, in his short talk, has given a good deal of what Dr. Perry calls "horse sense." We view these things from the same point. That is one reason why we differ so largely from one another. I find the discussion confined almost entirely to molars and bicuspid, but as Dr. Black and others, they do most certainly apply the same to incisors as well. I should like to read one or two quotations from Dr. Black.

(Quotations read from Dr. Black's book, pages 92 and 93, to the effect that margins of cavities must be self-cleansing surfaces covered by gum-tissue.)

By "self-cleansing," then, he means that they must be at a point where they either can be cleansed by the brush or covered by gum-tissue. If this is a fair statement, and if Dr. Black means what he says, I most certainly do take issue with him. I do not believe that in anything like all cases should the gingival margin be covered by gum-tissue. Referring to the matter in the *Items* it seems to me that any one who wants to get to the base of the subject ought not to fail to read the May number of 1891. It is full of practical thoughts and suggestions upon this point, and it makes one glad he is alive to know that there are many men who are full of good thoughts upon this subject. Some of these articles have been especially useful to me,—the one by Dr. Darby, of Philadelphia, and that by Dr. Perry, of New York. They put the matter in a light exactly as I like it. Dr. Darby does not believe that we are justified in such wholesale cutting of the tooth, the sacrificing of so much tooth-structure, and Dr. Perry says even admitting that these radical operations are more lasting, they are not always called for. He does not think that we are always called upon to do perfect work in the mouths of our patients, and very often work less perfect is more satisfactory. It seems to me that that pretty nearly covers the ground.

Dr. Weeks.—I simply wish to state that, so far as I am a member, I got my first ideas in regard to this matter from a gentleman who worked with Dr. Perry and had Dr. Perry

So you see my original ideas in this direction came from the East. I do not forget Dr. Perry and those other noble men who contributed so much to our progress.

Dr. Allan.—First let me say, in reply to Dr. Weeks, that no man honors Dr. Black more than I do, and I think I am as much of a Blackite as Dr. Weeks is. I stand by him and the work he has done, especially in the systematizing of these methods. I cannot, though, accept his theories in their entirety, much less his principles and methods of practice based thereon. This apologizing and explaining things, trying to make radicalism based on one idea (theory or dogma, call it what you will) harmonize with conservative thought and method based on long experience and thoughtful attention to all laws governing the subject, seems to me most unwise and lacking in force of application. Western men, as a rule, are honest in their convictions and know just what they say, and they do not readily apologize; much less will they thank any one who makes an apology for them. In this extension for prevention theory they know exactly what they mean, and expect to stand by their colors. They fully believe we are behind the times, and that they are up to date and a few years ahead.

Regarding the applicability of the system to others than molars and bicuspid, the system is applied to front teeth in exactly the same way.

As to not understanding Western gentlemen, I claim that, within reasonable limits, I can understand the English language.

Dr. Weeks.—We do not speak it out West.

Dr. Allan.—As I read Dr. Black's articles, and as I look at his diagrams and drawings showing how much tooth-structure is taken away, I tell you it amounts to just what I have stated, and I will not take back one thing I have said. Either they do not speak the English language or they do not know how to draw, or both.

Now, when we take an instrument to examine a filling, and find that the decay around that filling extends into the tooth beside the filling so that you can place the instrument to the bottom of the original cavity beside the filling, I tell you it means a poor filling. But this is not the same when the decay extends for some distance away from the margins of the filling, and when your instrument comes to the filling it will not go in beside it. This radical system is advocated by some of the text-books, and

especially in the treatise by Dr. Johnson, whom I consider to be a most extreme man. When a man virtually tells all of the profession that they are twenty years behind the times, the ninety-nine fellows so stigmatized feel like replying little to this. I do not think we are behind the times, but we can take in new ideas just as quickly as any men, West or South.

Dr. R. H. M. Dawbarn.—I do not wish to make a speech, simply a little announcement,—namely, that for the first time in the history of this island the dental profession has been recognized as it should be recognized, as a specialty of medicine in the largest hospital in this city, the City Hospital. As you know, a representative of this Institute and one from the District Dental Society were appointed at my request to represent the profession at the City Hospital, and they have done useful work for a year past, but they were not given a seat or vote in the board. They have occupied the same position as the pathologist. But at the last annual meeting, that was this week, I brought the matter up and succeeded in carrying it through, so that now dentists will have a seat and a vote on the board exactly as other specialties. I am very glad, Mr. President, of having had this opportunity of bringing this matter before the Institute.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology

AMERICAN MEDICAL ASSOCIATION, SECTION STOMATOLOGY.

DR. GEORGE V. I. BROWN, of Milwaukee, read a paper on "Surgical Correction of Malformation and Speech Defects due to Malformation associated with Harelip and Cleft Palate."

(For Dr. Brown's paper, see page 301.)

DISCUSSION.

Dr. James G. Kiernan, Chicago.—There was one point especially brought out in this paper which was new and which e

why the cleft palate has been found apparently not hereditary. Dr. Brown alluded to the fact of danger of bacterial infection in these cases. At one time I was a health officer, and found that a large number of cases had been so infected and died in infancy. With regard to the statement made by Dr. Brown about the speech, not only is it perfectly justifiable from the stand-point of neurology, without dealing with the question of details, but to a certain extent it applies to a certain class of deaf mutes and to a class of idiots who become deaf mutes on account of the lack of trying to follow pretty much along the same lines. I think from that stand-point the paper deserves particular attention. To a certain extent there is a number of individuals with cleft palates who are a survival of conditions existing quite early in development and some comparatively late. There are human beings who are in a condition similar to some of the lower apes, and this gives the title to this number. With regard to the nasal septum, that is like the survival in a degree of the jowl-like condition which is presented quite early in the development. The human would not develop alone the regular face and nose, but he would have with the nose and face a jowl-like appearance which is found among the lower apes.

I think the paper deserves special attention because it was so practical, not only in the general treatment of these conditions, but in the surgical treatment. A large number of these cases are mentally defective, and that fact should be taken into account in dealing with them.

Dr. D. Baldwin Wylie, Milwaukee, Wis.—I do not know that I should be allowed to speak before this Section. I am here on account of the great interest I feel in the paper that has just been read by Dr. Brown, and largely because I have had opportunity to observe the work. The results obtained by Dr. Brown in this work are really worthy of the most earnest consideration. The matter of speech that the doctor has taken up in a somewhat exhaustive manner is one of considerable interest also. The doctor, with his usual modesty, has given himself little credit for it by overlooking or neglecting, or purposely keeping from view, the fact that persons' ears are different. The cleft palate, as you all know, is, as a rule, associated with other forms of arrested development, and almost always there is more or less defect of the hearing apparatus associated with it. Now, we all know there are human beings, to

all intents and purposes normal in development, who could their life depended upon it, learn so simple an air as 'Doodle. This is simply because they have not the perceptiveness of hearing necessary for it. Now, if a perfectly developed so far as we can see, is defective in the matter of imitating sound, which, of course, is only a secondary result of perfect hearing, it seems to me to be so very patent that it hardly needs mentioning, that a person who is unquestionably and evidently defective in the matter of development could very easily have a defective hearing apparatus that would make it impossible for him to produce musical sounds or other sounds with sufficient accuracy to imitate them with any resemblance whatever to the original. I know by personal experience coming from an acquaintance with Dr. Brown that he has felt at times a little despondent because he cannot get better results in the matter of speech, and I raise this point because it seems to me that even though, as in this case, he gets no speech at all, he has certainly accomplished something that, while perhaps not wonderful, is certainly worthy of the effort of any man. This little patient is an example, and I refer you very strongly to the subject I have just raised. He is absolutely defective in the matter of hearing, and if he is able to produce violin sounds that are conveyed to his brain-centre through the medium of bone conduction, it is simply an unusually developed ability to interpret sound-vibrations through other sources than that of the auditory nerve.

Dr. George T. Carpenter, Chicago.—I was very much interested with the paper and with the illustrations. I am sorry that the models do not show the conditions a little farther back, so as to give the anterior pillars and also the uvula, which are the essential points in the reproduction of the voice. The doctor in his report spoke of the patient with simply a cleft in the soft palate, this being much worse than where the cleft was clear through the hard palate and extending on each side of the intermaxillary bone. My experience has been that that is the common condition. In large clefts with the double harelip frequently the voice is much better than where there is a partial cleft of the soft palate. Some of the worst cases I have had, so far as the voice is concerned, have been from the smaller defects in the soft palate. I attribute the reason for this to an intent on the part of nature to overcome those larger clefts which is done in the majority of cases of

trophy of the inferior turbinated bones, and in that way control to a certain extent the voice. The pillars hang heavily on the sides from the large clefts, and the patient has more control than one with simply a slight defect. I believe these operations should be performed as soon as the child can well stand an anæsthetic. The great trouble has been with the lack of power to stand the anæsthetic, and we must wait until the child is sufficiently robust and the deciduous teeth have taken their places in the arch, although if the child were in good condition I would prefer operating,—the younger the better. In cases in advanced life or young adults I have had very poor success with the voice with surgical operations. The doctor speaks of this slow method of drawing the parts together. I understand from the paper that he draws the parts together, getting all the margins approximate and then dressing the margins and making his union, but the great difficulty I have found has been to overcome the tension. I can get union by dividing the muscles on either side and frequently raising the periosteum and raising the parts of older patients. You have hard work to make the parts approximate on account of resistance, and by raising the periosteum and sliding the margins together, and then making incisions to overcome the tension, you can get union, but even then I have had tension so the voice was not improved, and I have one case that I have operated on twice and afterwards made an incision and put on an obturator. In persons fifteen years of age or over it has been my experience that the obturator will improve the voice more than a dentist's plate, and it has been a difficulty to secure sufficient tissue to accomplish the adjustment made to the true size.

In reference to education, the whole thing is a matter of education on the part of the patient. A patient with a cleft palate can be educated so as to speak almost distinctly with the cleft existing, if he will take the time. It is a good deal like stammering. The habit is formed and they forget themselves, but if sufficient time be taken not to speak faster than the tongue can follow, the habit can be cured entirely. Although the operation for cleft palate is a great success before the voice is acquired, I think the cases are comparatively rare where we get good voice-sounds. Anatomically they are much improved with the obturator, but there is much more to go through with, and the ultimate outcome is not so good.

Dr. G. V. I. Brown, Milwaukee, Wis.—Perhaps I did not make the point clear. The point of resistance is over the bone. The

work is done gradually. The borders are finished off with a surgical engine and put in place. Then, after adjusting the appliance, I made a powerful clamp, sprung it right over the borders and bent it over until I brought it together. During this process of union I continued the screw right along and got it over as far as I could, and then afterwards narrowed the cleft at the ends by tightening the screw.

I wish to say, in regard to the matter of speech, I am not in favor of any speech you get from the obturator, but of getting the nasal sound. I think the chief difficulty in those cleft palate cases is not so much due to the cleft as to the fact that in those cases we have the nasopharynx filled with adenoid growths. I operated on a little fellow who had only a slight cleft and came near losing the patient. I discovered that an operation had been attempted before, but without success, as he was once anesthetized, for the reason that no one had been paying attention to the fact that the pharynx was filled with vegetations. The ability to close that space is not so great as the inability to open it perfectly.

AMERICAN ACADEMY OF DENTAL SCIENCE

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, on Wednesday evening, January 9, 1902, President Bradley in the chair.

Mr. George B. Gordon, of the Peabody Museum of American Archaeology and Ethnology, Harvard University, was the principal guest and essayist of the evening.

The Academy first gave its attention to incidents of dental practice and presentation of specimens.

President Bradley.—We will take this occasion for presentation of instruments and specimens. If there is anything our fellows have to offer, we shall be pleased to give them this opportunity to present it to the Academy.

Dr. Delabarre.—I have a Logan crown which was worn in the mouth perhaps a year, or a little over, when the patient came to me and told me that she was not conscious of any strain which she put upon the tooth at all, but she

the crown was off one day, and found it on her tongue. I looked at it closely, and to the naked eye it was evident that the platinum in the pin was crystallized. Never having heard of anything of the kind before, I thought I would present it to the Academy. You will see the pin is crystallized; through a microscope it shows up much better. Opposite that is a platinum pin which I took this afternoon for the sake of comparison, and with two pairs of pliers it took ten full bends one side and the other before it broke; and you can see that pin is not crystallized like the other is.

Dr. Baker.—I would like to ask Dr. Delabarre how that pin was fastened in?

Dr. Delabarre.—With cement. I know that steel will crystallize under vibration in machinery and bicycles, so that under very slight strain it will break. I have had handle-bars on my bicycle break easily. It comes off and is perfectly crystallized, the same as zinc ore. I never knew platinum to do that, and particularly a case where it is so firmly surrounded by cement and there can be no vibration.

President Bradley.—As I look at the specimen, it seems to me, Dr. Delabarre, that the crystallized appearance is possibly the burnishing. That is what I should have supposed it was, unless you had told me it was crystallization. It seems to me as if it had been burnished against the broken part of the tube and got a little polish on it at certain points.

Dr. Delabarre.—I think I should differ with you on this ground,—that if it were polished by burnishing, it would not have the sharp and fine angles that that has.

Dr. Stevens.—I should like to ask Dr. Delabarre if he knows what per cent. of platinum is in these pins.

Dr. Delabarre.—I do not. I did not put it in myself, and do not know, and have no means of ascertaining how much platinum there is in it.

Dr. Banfield.—Do I understand this pin was broken, or came out of the tooth only?

Dr. Delabarre.—The pin was badly broken. I had to spend about two hours on it.

Dr. Banfield.—Why I asked is this: I had occasion to have a tooth baked a few days ago, and I had a platinum pin baked in it. I afterwards tried to bend the pin and found that it broke very

easily; it seemed brittle, where before the metal seemed tough. This changed condition in the platinum might be explained if overheated. I have never had this happen before on any platinum pin.

Dr. Meriam.—What furnace was used for baking?

Dr. Banfield.—A gas furnace.

Dr. Werner.—I had the same experience that Dr. Meriam speaks of. Many of the crowns baked on platinum have been decidedly unsatisfactory for that reason. The excessive heat in baking them often causes failure, not only from the brittleness of the pins and platinum base, but from the porcelain shattering away. If you have it thin and burnish it down to fit the base, you will have to have it re-enforced, sometimes the third time before you have a satisfactory baking on the floor. Is metal made brittle by heating or hammering it out? Is platinum metal deteriorated by flattening or heating? Does a metal change take place? Platinum, somehow or other, seems very unsatisfactory, surprisingly so at times.

President Bradley.—The paper for this evening, "Among the Hondurians, Ancient and Modern," is so interesting that we may look forward to with anticipations of a great deal of pleasure. The country is one of great interest to us, both in Central America, and we shall undoubtedly listen to the speaker with much interest. Mr. Gordon has spent some time in that region, travelling and making expeditions and explorations. We have very great pleasure in introducing to you Mr. George Gordon, of the Peabody Museum of Harvard University.

(For Mr. Gordon's paper, see page 321.)

DISCUSSION.

President Bradley.—I am sure we have all been interested in this story of the Hondurians, and shall be pleased to open the discussion, which is to be opened by Dr. Fillebrown.

Dr. Fillebrown.—Mr. President, I hope to say a few words, and at this time, I think, if our guest will give us the benefit of his photographs, by passing them around, it will add to the interest of the discussion.

Mr. Gordon.—This first photograph is not from Copan, but from the ruins of Panama, in Yucatan. It shows a complete

the skull of a young girl, apparently, which shows the filing of the teeth. It is a quite perfect specimen.

The second shows a skull from somewhere on the peninsula of Yucatan, the exact locality being unknown. The jewels which had been set in the front teeth have all fallen out, but you still see the cavities in which they were laid.

The third photograph represents several sets of teeth from the tombs of Copan.

Dr. Fillebrown.—These remains, I understand, date somewhere from one to two thousand years ago?

Mr. Gordon.—About a thousand years. The limit in the other direction might well be placed at two thousand.

Dr. Fillebrown.—This photograph is particularly interesting because it comes right home to us, and especially to Dr. Allen, who gave us a paper on inlays at our last meeting. It shows remarkably well the perfection of the circular inlays, and it is surprising to what a degree of perfection they attained.

I had the privilege, not long since, of seeing the originals from which these photographs were taken, and it was hoped that Mr. Gordon would be able to have them here this evening; but they are so specially rare and so very valuable that the superintendent of the museum was unwilling that they should go out of the custody of the museum, even for a short time, and consequently we do not have the privilege of seeing them. But any one who can find the time to call at the museum can examine them.

What I have to say is of the dental aspect of the case. These inlays were made of what is called green jade, and are very accurately fitted. They were put in for the purpose of ornament, undoubtedly, and for nothing else. Several of them I saw there that were perfect in position and have remained so through all the disintegrating power of the years that have intervened. Some of them were out, and the cavities were still perfect. In others decay had destroyed the formation of the cavity. But it is remarkable that they could be so perfectly fitted. There is no man among us to-day that can cut a cavity and put in an inlay more perfectly than those are put in. They were supported by a cement, white in some cases, in other cases red. In some of the cavities there was a red substance, which seemed to be of the nature of cement. These were brought to Cambridge in 1893, or a little

before that. The discoverer of them and many of the authorities of the museum consider that they belong to one set. It is reported that they were found in place in the jaw; but I think that cannot be so, for so important a part of a specimen would not have been left behind. Among these you will notice one which represents rudely the root of a tooth.

In a communication to the *Dental Practitioner*, the published in Buffalo, these specimens are referred to and the opinions of the collector and some other observers are stated. The statements I wish to speak of are in regard to the supposed artificial root carved from stone which appears in the case with the tooth. The first statement is that it was found neatly fitted into the socket of an inferior left lateral incisor, and was shaped much like a natural tooth. It is also stated that these all belong to one set of teeth. To my mind they are not all of one set. I think any careful observer would say that the teeth were not proportionate; and it is questionable whether on one side the bicuspid is not represented by a canine. But I am satisfied in my own mind that they are not all from one set of teeth.

The second statement is that it had been worn some time in life, and this was indicated by a thick incrustation of tartar on it. I understand that this opinion was held by men of pronounced erudition in archæological knowledge who are quoted as authorities on these subjects. After closely examining the specimens, the opinion seemed to be forced upon me that the accuracy of these opinions is questionable, and I am obliged to differ from them for the following reasons:

1. It seems to me highly improbable that, had the roots of the teeth been found in the jaw, the discoverer would have failed to preserve them in place, and the jaw would be with the teeth. Indeed, no whole bones were found, only the crumbled fragments left by the disintegrating force of time.

2. These teeth which are held on a card of wax are, in my mind, evidently not all of the same set. If so, this shows that the remains were somewhat mixed, in which case foreign matter might have been picked up with them.

3. Any artist, capable of carving the root of a tooth into the socket in the jaw, would not have stopped there, but would have finished the crown also. The probability of its being broken off if it was made is very remote.

4. It is proved that nature will not tolerate any substance so rough and generally incompatible as is this alleged root.

5. Careful recent examination of this alleged root has proved it to be the point of a stalagmite, and this alleged tartar the partially crystallized lime salts which make up the additions to the main body.

I think it well that these statements go on record somewhere, because it seems to me that the prior statements that have been made in regard to it, and I have good reason to believe are entertained by credible men at the present time, should not pass too far down into history without the counter-statements regarding such apparently incorrect conclusions.

I cannot presume to add a word to the most excellent and interesting story that our friend has given us to-night. I for one thank him for being willing to come here and tell us of it. There is much of interest added to any account when the man is talking who has lived there himself, in regard to what he has done and what he has seen. It gives a life-like vividness to it that no written account can awaken.

President Bradley.—The subject is open for general discussion. We should be pleased to have the matter referred to in any way, or questions asked. I have no doubt Mr. Gordon would be glad to answer any questions.

Dr. Stoddard.—I would like to ask Mr. Gordon if there is any point of similitude in the things that are found in these ruins to those of the mound builders,—i.e., any of the instruments, or pottery, or anything of that sort, that are found in the mounds in the Western and Southern States?

Mr. Gordon.—So far as the pottery is concerned, there are certain types of pottery that are common to all localities in America, and affinities to these types could be found in almost any part of the world. Outside of these types, that might be called common types and might pertain to almost any country in the world, I have noticed no affinities. The decoration on the pottery found in these old cities appeared to me to be entirely distinct from any decoration that has been found anywhere in North America; the motives seem different, the designs entirely distinct, quite unique, and peculiar to themselves.

With regard to other things that have been found, it has been thought by some that in some of the ornaments and engravings

on bone, shell, and stone, that have been dug up in the mouth of the valley of the Mississippi and its tributaries, have been the rudimentary elements from which some of the motives of the symbolism of Central America can be traced; but there are great differences of opinion on this point, and some maintain that the similarities and apparent affinities come in it is to be regarded as purely accidental, and that it can be explained in that way.

Dr. Clapp.—What was the character of the stone and the nature of the excavations?

Mr. Gordon.—With regard to the depth of the excavations, they varied. When we undertook the excavation of any particular group of structures our plan of operation was, in the first place, to make a careful survey of the structure as we found it. Then, to present the appearance of a mound in the shape of a beehive, all over it could be seen fragments of sculpture and of building-stone. By excavating towards the centre of such a mound, at the base for a distance varying from ten to twenty-five feet, we would come to the foundations of the building, with the lower part still standing to the average height of five feet. All the material removed by excavation was simply from the top of the upper part of the structure, which had fallen down and lay in the lower parts of the structure in its own ruins. Sometimes enormous quantities of material consisting of broken sculpture and building-stone, and stucco had to be removed before the interior of the buildings could be reached, which proved that these buildings were not only very broad in their foundations, but apparently they had extended to a great height.

The most important tombs were found, as a rule, beneath the pavements of court-yards, and for that reason it was very difficult to find them. You might remove a whole pavement and not find a tomb at all; and then come upon one accidentally while you were expecting it. There was nothing whatever to mark the position of these tombs. Each tomb was a simple vault, averaging about eight feet long and four feet wide, built of neatly cut stones, especially laid in rows, without mortar or cement, the same construction that was used in all the buildings. There was not more than two feet between the top of the pavement and the roof of the tomb. In other cases the tombs were found beneath the foundations of the buildings. All the buildings rest on corbelled foundations, and the approach was by a flight of stone

leading up the slope to the entrance. Very frequently by removing a few of these steps and digging down to the level, or slightly lower than the level of the surrounding pavement, you would find a tomb. But not all the houses we explored had tombs connected with them in this way. These would seem to have been family vaults, and all of them contained the remains of more than one person.

The kind of stone that was used in all the structures, in the monoliths, walls of the temples, and everything, in fact, was a trachyte, a rock of volcanic origin, a species of tufa, not very hard. It is fine grained, and slightly softer than sandstone. The stones were all very nicely cut and squared, and mortar was not used in the construction. The builders were not careful to break joints, and that was one weakness in all the structures which facilitated their gradual disintegration.

Dr. Werner.—I would like to ask Mr. Gordon if, where these burial-places were, human bodies exclusively were buried, or whether there were remains of animals, or of teeth other than human teeth.

Mr. Gordon.—It cannot be said that there is any positive proof of a general custom of placing animal remains with the dead, although there was some evidence that would seem to point to such a custom. We did not find any teeth but human teeth in the tombs except in one instance. In this instance of which I speak the tomb had already been opened: one of the slabs forming the cover had been removed, and it had in course of time become filled up with debris and earth that had fallen in. Among this intrusive material near the bottom, and appearing to be in contact with the human remains, was found the tooth of a horse. It has been suggested that this discovery might have a bearing on the question of a native horse in America, but from the fact of the tomb having been opened, the evidence is worthless. The probability is that it had been introduced in recent times.

I should mention one case recorded by Maudslay. No vault had been built in this case, but a mound had been constructed about five feet high, and with a human skeleton in the interior of this mound was found the skull of a jaguar, which was painted red. It certainly was placed with the body at the time of burial, perhaps in fulfilment of some superstitious rite. In one case we found the skull of a peccary, or wild hog, which was beautifully carved

over the entire surface. In another case there were several jars found, and in these jars were the skeletons of small animals. These were the only instances in which remains other than human remains were found.

Dr. Werner.—Were any metals found?

Mr. Gordon.—No, no metals of any sort. That was one of the most surprising things. Any one who looked at the sculptures would conclude that metal tools must have been used in making them. Sometimes the carving was very deep, and a great deal of work was done in cutting. It is difficult to conceive of a stone tool being long enough and at the same time strong enough and sharp enough to do that work; but no tools except stone tools were found. There were no metals, not even gold. It is the rule for the streams of this country to contain gold washings, and yet the people of Copan either did not make the discovery, or else they did not make any appreciation of the yellow metal.

Dr. Clapp.—Any specimens of glass found?

Mr. Gordon.—None except natural glass, that is, volcanic or obsidian. This material was used for making knives and other implements requiring a very sharp edge. The knives were made by flaking. A cylindrical block was formed, and then by a process, which we do not know, flake was broken off from one side to the other, giving a double-edged knife with very fine edge and a very fine point. The same material was used for making arrowheads. In Mexico at the time of the Conquest, and we find it in the letters written by the conquerors, that in the markets of Mexico there were barbers' booths where Montezuma's men were shaved of their scanty beards with razors made of obsidian.

Dr. Wilson.—I would move that a vote of thanks be given to Mr. Gordon for his exceedingly interesting and instructive report this evening.

Voted.

Upon motion, adjourned.

CHARLES H. TAFT, D.M.D.,
Editor American Academy of Dental Science

MASSACHUSETTS DENTAL SOCIETY.

(Continued from page 272.)

Friday, June 6, 1901—Morning Session.

At the morning session on Friday the following clinics were successfully given:

Victor H. Jackson, M.D., D.D.S., New York City, Demonstrating the Jackson System of correcting Irregularities of the Teeth.

Chas. A. Meeker, D.D.S., Newark, N. J., Bleaching of Teeth with Pyrozone.

Charles C. Patten, D.D.S., Boston, Mass., Porcelain Inlays with Hammond Electric Furnace, illustrating it as a Practical Method.

Dwight M. Clapp, D.M.D., Boston, Mass., Combination Fillings.

Dr. T. D. Shumway, Plymouth, Mass., Tin and Gold Filling by Affinity.

Lawrence W. Baker, D.M.D., Boston, Mass., "A few Ideas."

Dr. Frank L. Marshall, Boston, Mass., Staple Crowns.

Arthur A. Libby, D.M.D., Boston, Mass., A Demonstration of Burnishing Gold.

Dr. Charles H. Gerrish, Exeter, N. H., Non-Cohesive Gold-Foil.

George C. Ainsworth, D.D.S., Boston, Mass., Tin as a Filling-Material.

Dr. Gustave P. Wiksell, Boston, Mass. Repair of Crowns and Bridges in the Mouth.

Edwin C. Blaisdell, D.M.D., Portsmouth, N. H., Non-Cohesive Gold.

Dr. Julius F. Hovestadt, Boston, Mass., Soldering Porcelain Facings into Gold Crowns without investing.

Robert T. Moffatt, D.M.D., Boston, Mass., Carving and baking Teeth, using the Hammond Electric Furnace.

Friday, June 6, 1901—Afternoon Session.

The meeting was called to order by the President at 2.30 P.M.

The following paper, on the subject "Good of the Order," was read by Dr. Chas. H. Gerrish, of Exeter, N. H.:

What I have to say does not possess the dignity of a paper, for it has not been written out. I shall appeal largely to the younger

men of the profession, the young man who has his future in him, who is standing upon the threshold of the profession, gone into it not for the money he will get, but with the lofty and noble purpose of doing good to mankind, and who throws away the use of the grandest opportunities of his life. I feel that I have been highly honored in being asked to give a clinic and a paper.

Now, I am going to ask you one question: What do you ought to be charged patients for cleaning their teeth? I want you to answer it until I give you my idea of what cleaning teeth means. "That is what we call it in the country." In the city you sometimes dignify it by the name of treatment. When a patient comes into the office and asks, "What will you charge for cleaning my teeth?" what answer will you give him? Thirty years ago I had a patient of Dr. Riggs's, of Concord. He came to me with his child, a son who was in the academy. He said to me, "I am very particular to have you do this cleaning and have it done." I took a post-graduate course right then and there. I treated the teeth under the direction of Dr. Riggs, and I gained an insight into what that meant. That plan is to treat the teeth of the young as soon as they emerge from the gum. When a child comes to you with his second teeth just beginning to erupt, it is your business to begin at once to take off the decayed enamel. We have no respect for the enamel as a preserver of teeth. It is a superstition indulged in by most people that the enamel keeps the teeth. Why is the dental profession increasing in number? The greatest factor in the answer to that question is this belief that enamel preserves teeth. I take it off instantly, as soon as it is itself defective. I use anything to do it with that will smooth and polish all the surface of the teeth.

The instant you see a white particle appear on the child's teeth, you say to the parent that tooth will decay in a very short time. You wait for that decay to go on, and it goes on. I do nothing, but I begin then and there to polish and smooth the teeth. I had a case which I was very much interested in a long time. This case, I may say, interested me most particularly. A child brought to my office who had pits running across the teeth. What shall be done with these? If you should fill them with amalgam, it would take fifty or seventy-five little fillings to do the work. In fact, at that time I cut away the entire enamel from those teeth. I had that patient last year,—it was twenty-five years ago that I

work,—and not a single filling has been put in those teeth that I treated in that way. I am twenty-five years removing this enamel, but I save filling and save the teeth. One must be very careful in doing this work, and polishing takes a long time. But you ask, If the enamel is gone and the dentine exposed, will not the teeth decay? I answer, the enamel has little or no life, while the dentine has. By simple polishing away the enamel you get down to a substance which is unlike the dentine covered by the enamel and it becomes a substance stronger in resistance than the enamel, not only on the outside, but in every portion of the teeth. This is accomplished slowly, of course, and only with careful work. I do not wish to say anything to encourage the young man to be rash in destroying the enamel of the teeth, but I do say, have no fear or hesitation in cutting it freely when showing signs of decay.

The point I wish to impress upon you young men is that there is a dignity in every part of your work, but consider nothing beneath your attention. Preserve a sweet, wholesome, healthy mouth yourself, and help your patients to do the same. There is no portion of dental practice more important than this work of treating teeth. It is something I would emphasize and advise you to take up. It is with you young men that the future of dentistry rests. Remember that in the simplest operation in dentistry, such as amalgam filling, you should put your best efforts into the things you are attempting to make a success. Remember that the simplest operations are none of them beneath your careful attention. There are few men who care to do gutta-percha fillings, but there is no one substance that preserves the teeth better than this. The end and aim to-day seems to be to do great things to aid and further the profession. We should so teach our patients and instruct them in the care of their teeth that the necessity of our work should grow less and less year by year. It is no use for you to go into dentistry to make money. You cannot match your faculties against those of your patient, and your judgment against theirs. It is your duty, and should be your object, to instruct your patients so that they may begin and carry on the work you have commenced. You want to inspire them all with the beautiful ideal of a clean, wholesome mouth, and when you have once established that idea, they will never forget it, and will remember you all their lives, which is the highest compliment they can pay you. They will see the importance of it, and it will induce the happiest feeling.

I am sorry to have taken so much of your time, for I intend to talk so long. I wish to emphasize this one. There is no portion of your work, however humble it may be, should not receive your best attention. Of you older men like to ask, Who is responsible for the prices for dental work? Dental parlor prices are, gold crowns, five dollars; silver crowns, one dollar; cleaning teeth, fifty cents. If your time is worth five dollars on a gold crown, it is certainly worth one dollar on a silver crown. I had a lady say to me, not long ago, "I have been coming to you for twenty years. I was not satisfied with your charge for cleaning and cleaning my teeth. I want now to say to you that for twenty years you have done me the greatest service." For twenty years I was considered a robber by this educated lady.

If the spirit of helpfulness has not entered into your hearts and minds, then, indeed, have you failed to grasp the situation of your calling and the true meaning of your chosen profession as dentists. Mr. President, I thank you.

DISCUSSION.

Dr. Henry A. Baker, Boston, Mass.—Mr. President, let such a subject as this and one so well dealt with go by without having something to say upon it. I know Dr. Gerrish well. He has been in practice for thirty years, and I have never listened to a fitter essay pertaining to the minor things so important to the profession themselves. I endorse everything he has said, and his example to our young men is one of the most valuable lessons I have ever received.

Dr. A. J. Flanagan, Springfield, Mass.—Those of us who are practising in the smaller places do not have the opportunity of making the money which those in the cities have, and in view of this nature this fact should be borne in mind. As we go around and see the advancement in our profession, I sometimes come to the conclusion that the dentist gives a great deal of his fee. It is true that no patient can estimate the value of the services for you. No one in looking into Dr. Gerrish's fees can suspect that he was in the profession for the money in it. If you will find that the public are getting all they pay for from the honest practitioner's office. One thing is true, a man reaches a level sooner or later. If he has high aspirations or low aspirations, the results will be on proportionate lines. "By their work shall ye know them."

Dr. Mary E. Gallup, Boston, Mass.—I have not had a great deal of experience, but find that the most trouble is caused by patients not using the tooth-brush properly. I have always used a dry brush myself, and supposed every one did. I have found only one patient in several hundred who used the tooth-brush dry, until I advised them to use it that way. I am an advocate of this method, and believe it the best way to keep the teeth mechanically clean.

Dr. Sara P. Hooker, Cambridge, Mass.—I am afraid that I am rather too young a member to venture any remarks on this subject. I suppose I have the same difficulties that every one else has. It is impossible to always charge for your work according to the value of it. I have been interested a little in the new method of cleaning teeth by friction and keeping the surfaces clean as a means to prevent caries, but I have not experimented with it long enough to be able to talk about it.

Dr. Geo. A. Maxfield, Holyoke, Mass.—I want to emphasize this one remark of Dr. Gallup's in regard to using a dry tooth-brush. It has been my custom for years, in presenting a tooth-powder, to instruct my patients to always use a dry powder on a dry brush. They are thus able to get the full benefit of the powder and to fully remove the secretions from the teeth. I have never but once before heard it submitted as being of any importance, and that was at a dental meeting in New York. While this subject is up, I want to tell you of an incident that happened in a police court at a recent trial of one of the cases for violation of our dental law. A member of this Society went on the witness-stand as an expert, and among other things he said that cleaning the teeth was not a dental operation, and was not so considered by the profession; and that he would not remove the tartar from the teeth of a patient whose teeth he was cleaning unless the patient made special request for him to do so.

Dr. Gerrish, Exeter, N. H.—Mr. President and friends, I thank you kindly for the gentle way in which you have handled me in discussion. I did feel audacious, as some one remarked, in coming here in this way, but I am made of the same material that you are,—clay,—endowed with a love for my work as you are, and I hope and pray that you and all of us will be the best of friends from to-day.

President Dowsley.—Dr. Payne expected to be here, but he has sent a paper, which will now be read by the Secretary.

CAPSULE IMPLANTATION.

BY ROBERT EUGENE PAYNE, M.D., D.D.S., NEW YORK CITY.

Select a trephine about two-thirds the size of the normal cut a socket about two-thirds the depth of the normal socket is slightly enlarged at the bottom. The capsule should be of the trephine used. A seamless capsule of silver, gold, or placed in position and filled with kneaded rubber.

Select a plunger nearly the size of the capsule, and by pressure and lightly tapping the plunger the kneaded rubber spread the thin capsule to every thin equality of the socket, this way it will be securely held in position. Into this fit a various gum porcelain tooth, porcelain root, and permanently it in the capsule. I use a two per cent. solution of cocaine cutting the socket, and use every care to sterilize before permanently fastening the capsule in place. The operation is completed at one sitting, gives no pain in spreading the capsule, the tissues heal kindly around it. The tooth is firm at once being necessary to ligate it.

Various methods have been used to implant capsules by ligation and otherwise, but there is no record of a seamless capsule spread in the manner above described. The operation is yet at an experimental stage, and I cannot report successes. Failure may be due to an imperfect capsule, those used being too thick and rigid. I am now trying some very thin capsules, and hope to be able to report some cases at your next meeting.

The fact that Dr. Von Bergman, of Berlin, assisted by Dr. Mahl, of that city, have introduced metal splints, held by screws and wire to retain the fragments of the lower jaw after resection, that have been retained for years, leads me to believe that the capsule implantation, if carried out upon the lines with proper material, will yield a successful capsule implantation.

At present I depend for implantation upon mature, straight, natural roots, two-thirds the size of the normal root, to which I attach a porcelain crown. These roots are more numerous than any I have used during the past ten years. I have three teeth each, implanted four years ago, under very unfavorable circumstances, complicated with pyorrhœa, that are in

condition to-day. I will be glad to show them to any of the members that will notify me at any future date in advance, so that I may arrange a meeting.

DISCUSSION.

Dr. W. E. Griswold, Denver, Col.—In regard to Dr. Payne's paper, I show you here some drawings representing a system of implanting in connection with the use of my retaining springs for the support of plates. In this drawing we have an edentulous upper jaw with a section made through it in the bicuspid region. On one side is an opening made for the capsule. On the other the capsule implanted and expanded. I use a capsule made of chemically pure silver of an accurate gauge and milled on the outside. I use a trephine of exactly the same gauge, cutting down to a depth consistent with the region cut into. I place the capsule in place, measure for length, then remove it and cut off, take one of the punches going with my outfit, and punch a hole through a piece of 28-gauge plate, making a disk to go over the end about four or five lines larger than the capsule. This is soldered in place, the capsule replaced and expanded, using an oval engine burnisher. Now I use a hollow iridio-platinum tube, which just fits inside the capsule. Place inside, cut off the right length, and solder a piece of plate over its end. I notch them alike, as shown in the drawings, so that they will go back in the same place. With two or more of these implanted and prepared as shown, I take an impression of the mouth, make a model of sump, and transfer to my instrument for paralleling all my appliances, and, holding them while soldering, select a spring stud and solder it to the top. Then I use the punch, as before, and from a piece of brass about 20-gauge cut a hole, which goes over the spring. I adapt this nicely to the top, and then proceed to make my crown-cap as described in previous article. It is obvious that the soft tissues will be compressed to just the degree this brass plate is thick. The objection to any work of this kind as a means of retaining plates is the inability to implant parallel. With my system, it does not matter at what angle the capsules are placed, the attachments can always be parallel. Neither is it necessary that they be at regular intervals.

I have talked with a good many on this subject, and many agree with me that it has a probable success. Such men as Drs. Harlan and Hunt, of Chicago, have done a little in this line. Dr.

Good has also implanted some. I have one case which has been in use six years,—a case where the central incisor was extracted, the root duplicated in gold, reimplanted and expanded, and a crown attached.

Dr. Prothero, of the Northwestern Dental College of Chicago, told me of a case where a friend of his met with an accident, placing the crown which necessitated extracting the root, the patient had to go to a reception that night, and had to do something to fill the gap, he filled the socket with amalgam and set a Logan crown in it. This at the time I saw him had been understood, been in use three months without any inconvenience. I do not see why we should not make as much of a success of the implantation as surgeons do of using silver plates in the trepanning of the skull. Why should they cause irritation and be sloughed any more than the use of silver sutures? I do not wish to be understood as endorsing the system; I simply follow Dr. Payne's lead and show how it can be utilized as a means of support for dentures and if it can be made a success it has great possibilities.

From a mechanical stand-point it is a success, as these crowns can be implanted so that it takes more force to remove them than you would care to exert. They require no ligation or suture. They are solid when the operation is completed, and they are so small that, even if the parts will not tolerate them, no damage is permanently done to the tissues. I am having made forceps for expanding these capsules which will greatly facilitate the operation.

In a table clinic such as I gave this morning the patient gets the idea and sees the results, but does not understand the method by which these results are obtained. You get a better knowledge by following me in a description of these charts.

It consists of a series of springs, made from a new alloy of metals, discovered by myself, after some four years' experimentation, which will stand the action of the oral secretions and a heat sufficient to flow 22-carat gold solder, and at that degree not lose high elasticity. As presented to your notice these springs are punched from this metal by a series of steel dies, brought into the form in which you see them.

I would first call your attention to that part of the system which necessitates the cutting off of crowns of teeth. To a root retained in the usual way I simply solder the spring stud, and cover it with a capsule made of platinum and iridium, carrying over

disk, adapting very closely to the root cap, then waxing together, remove them and solder, making what I call my crown-cap, on which all superstructure is placed.

In practical work, after capping abutments, we take an impression and bite at the same time in wax, and place this on the articulator. This is merely for reference, a means whereby we can ascertain the position on the root-cap to solder the springs so they will not interfere with placing a facing in front of them, and also determine the size to use and the length we can have it, and not have it interfere with the occluding teeth.

We now take an impression of the capped roots and edentulous parts. If caps have not come away with the impression, remove and place in their respective places, before running the model; cover the inside of caps and the surface of the pins with a film of wax. When the model is made (preferably of sump, or some other non-shrinkable material) shave it perfectly smooth and level on the bottom, and if for any reason you want your bridge to go in on one side the heel or toe, first shave it so that it will tip a little that way. Now warm the caps enough to melt the wax, and remove them from the model, and after melting out all the wax replace them.

We now take the soldering jig, warm its base, put a sheet of base-plate wax over it, press the model into this softened wax, fasten with the centring pin, and clamp with the nut. Now, by observing the model on the articulator you determine where on these root-caps you can best place the stud, and not interfere with the bite, and also allow a facing to go in front of it; also the length you can have them and the right size to use. Take this stud and hold it over a Bunsen burner until it is a dull red, but do not throw it into water to cool it, as it makes it stiff again and brittle. Place it in the open end of the soldering chuck, this in the jig chuck, fastening with nut; bring it to the position you wish it to occupy on the root-cap, and observe the angle to which it must be filled to fit accurately; loosen nut and remove all these parts, and, using them as a holder, with a fine-cut gold file cut to the desired angle. Replace, tighten nut, see that No. 8 is in line with the centring pin, and tighten all nuts. Flux, place a bit of solder inside the spring, and solder, using the pointed flame held on to the root-cap until solder has flowed down and fastened all together. Now loosen nut, raise up arm, which brings the root-cap with it, loosen nut, take out chuck, remove the spring and root-cap, see that the two are firmly

united, and if not, hold in a pair of pliers and complete the ring so that each leaf of the spring is soldered solid to the root. Now place a bit of vulcanizing rubber over the pin and carry it to the edge of root-band. Place the pin in a vice, so that it rests on the jaws, the thin edge of the band being protected by the rubber. Take the special pliers, place the capsule, and carry it over the stud. Observe the angle to which it must be filed to fit the root-cap around the base of the spring perfectly. Take a punch for the size capsule used, punch in a piece of plate metal enough to cover the root-cap and extend over it, on the side where the saddle comes, a hole which just fits over this capsule. Carry the plate to a position, and adapt perfectly to the surface of the root-cap. Then place the capsule and this plate together, remove and solder heavily on the plate, then thoroughly adapt the crown-plate to the root-cap so that nothing can get between them. If this is a bit loose, do not worry, it is all the better, as it facilitates easy working. When you can tighten when the work is in the mouth by a very slight pull on the end.

You will proceed with each abutment in the same way. When complete, pull off the crown-caps. Replace each root-cap with a spring stud soldered to it on the roots in the mouth. If you have a saddle (this being previously made), place in position, and place the crown-caps over their studs, and as they extend over the side caps on the side next the saddle they hold it in position; now take a bite, then select a suitable cup, punch a hole in the bottom of the cup corresponding to the shank of impression prop, place cup and prop in the mouth, see that it forces the saddle where you want it when the patient bites on the rubber cushion if the case necessitates the use of two or more of these props. While the patient is biting on the cup, take a piece of wire and go from one to the other on the outside of the cup, twisting it around each prop and binding them all together so that when subsequently replaced in the mouth they will be in exactly the same position. Now fill your cup with plaster and place it to position, and have the patient bite firmly on the props so that they force your saddle into the soft tissues with exactly the same pressure that they will exert in subsequent use. Force up your teeth to get an impression of all the parts in this, their true relation to each other in use. When hard pull out the root-caps and lay aside for polishing. Place a match or some piece of wood in the crown of the saddle so that it will extend well into the model.

Now make a metal of plaster and set up on an articulator with the bite. Take a bit of sump, or some other non-shrinkable substance, and build up on this model, over the crown-caps and saddle, enough so that you can remove them all together, turn over and solder all together on the side which comes in contact with the soft tissues, replace on the model, and finish in any way desired.

There are some members of the profession, and probably many patients, who will object to the amputation of crowns, but would prefer to have shell crowns put over teeth ground down. To accommodate these people I have made these springs in a different form, but just as serviceable,—a wedged-shaped U-spring with a depression in its sides, which, when the next size is slipped over, locks the two together. These springs are made in dies, the same as the others, and in three sizes, so that one size can be used as a box for the other, and for all porcelain work. The two larger sizes are made for higher fusing.

With the outfit comes two soldering chucks, one for the small size, and one for the second size, with a milled groove in the open end to hold these springs in position for soldering to the crowns, and in perfect alignment, by placing them in the chuck of the soldering jig plate. The method of procedure is similar to that described for the spring stud. You simply take your impression of the abutments, and you wax up the inside of the crowns so that when the wax is melted they can be removed from the model. Make your model of sump, and place on the soldering jig, as before described. Select the proper size spring for the place; take this spring and pass it through the flame of a Bunsen burner until it is a dull red to anneal it, then file it to the proper length to fit the crown, upend it on a piece of gold, drawing the open ends slightly together, so that it will be a bit narrower at its base than at the upper end, and solder on the inside. Now take this and lay it, narrow side down, on another piece of gold plate, fitting it perfectly. Flux it, placing a very little solder inside again, fuse it over a Bunsen burner, soldering the two firmly together, not allowing the solder to flow up on the spring any more than can possibly be helped. Now place this on its proper soldering chuck, put this chuck in the jig chuck, and bring it to the position on the mesial or distal side of the crown you wish it to occupy. By soldering this piece of plate on the side of the spring coming in contact with the crown, it reinforces the crown at this point.

This enables it to resist the force brought to bear on it in mastication. You now take the next size, slip over it, filing to the width and length, lay this on a piece of plate, and, springing the ends slightly together with pliers and holding in this position, solder on the outside, previously placing inside some wax dissolved in alcohol, to prevent any possibility of the solder flowing inside and spoiling the perfect fit of this box for the spring. Then remove your crown from the model, which is easily done on account of the wax having been melted, and force the box over the stud. It will probably go over very hard and stiff; sometimes it will be necessary to use a pair of pliers to force it on and remove it; but after doing this two or three times it is put on and removed off more easily. The perfect adaptation which you get in this is essential to perfect work. Plate G shows a model with a crown at one end with spring soldered to it, ready to go over it and be fitted to the saddle, shown in position on the model at the other end a stud, soldered to a root-cap, with its crown removed to slip over it. When both are in position you take an impression as before, with sump, of these parts on the model. When removed, remove and solder all three parts together, the crown, the box and the saddle.

Now place your abutments on their respective teeth or roots, put your saddle, with its abutments soldered to it, in position on the model, make a bite and your impression, make a model of plaster, set up in articulator, and proceed to finish the work in any way you like.

At 10 is shown a model with abutments setting at an angle, the springs soldered on parallel, and the space between the saddle and cap filled in with plate and solder, making a very solid attachment. In making this attachment, remember that the springs act altogether in compressing the outer edge, or larger diameter of the U-shaped wedge-spring; the box must be made in such a way as to compress its sides when it goes over and be rigid.

My claims for this system are, the ability to restore the contour of the soft tissues and give harmonious expression to the face, the ability to avoid the display of gold, and to make the porcelain denture most artistic and life-like denture known.

Secondly, even in the cheapest work, vulcanite, give your patrons something much more artistic, something held firmly in place, but removable by the patient for cleansing, and the occasional rest which the abutments need to restore to normal tone the

strained surrounding tissues. It also divides the strain between the abutments and the edentulous parts; also to make a temporary denture which will not irritate the recently lacerated tissues, and can be replaced at any time with more permanent work, without changing the abutments or attachments. The attachments hold with more tenacity than is necessary, but the tension can be made greater or less according to the strength of the abutments.

It affords opportunity to bridge space not possible by any other system, and attachments can always be tightened, should they wear loose,—the spring studs by slight tap on the end; the U-springs by spreading a little with a pair of pliers.

DISCUSSION.

Dr. Fred. S. Faxon, Brockton, Mass.—To criticise a paper of this kind of course is beyond me, so far as I know anything about this class of work. It has reached a point beyond anything I have ever seen or been able to do myself. The removable bridge-work with the simple attachment between the teeth that Dr. Griswold has presented, I think entitles him to the standing in his work that Dr. Gerrish holds in the cleansing of teeth of which he has just spoken, and both are beyond criticism. In speaking of the removal bridge-work, what little experience I have had shows me that it could not be applied satisfactorily in all cases.

In regard to cutting off teeth for the stud attachment, it is not that the dentist objects to the sacrifice of the crown so much as the patient; particularly the upper cuspids. The work can be done in different ways,—by the open faced cap, although personally I do not believe in them as a rule; you can also use the Staples crown, which does not come around in front and show the gold. Many object to having a good cuspid capped on that account. Also the space can be filled by the saddle bridge with two bicuspid attached to the molar only. I have a number of cases of this kind being worn successfully. There is another class of cases in which I should have to try Dr. Griswold's method before I accepted it,—those cases where the bicuspid and molars are missing on the lower jaw, where we have only the six front teeth remaining. This class of cases has always been very unsatisfactory to handle in my practice, that is to get a firm eating surface in the back part of the mouth where the condition is such as I have spoken of. In these cases, and they are the most difficult ones to treat, I have never been able

to make nor have I ever seen any dovetailing attachment but was either very complicated, looked bungling, or showed too much gold. For these cases I have found nothing so simple, fit, and satisfactory, all points considered, as a telescope cap attachment. The only gold showing is our cap on each side, while with Dr. Griswold's method the cap on abutment teeth and also the cap on the removal teeth on the removal piece must be a heavily tipped cap, thus showing practically two gold teeth on each side. My experience has been so satisfactory with the telescope cap in these cases, that, although I shall take advantage of an opportunity to try this method of Dr. Griswold's, I hardly feel that I have been converted. As I said before, it is not my purpose to criticize any method, as I heartily endorse it in every particular, except in those cases last referred to.

Dr. Griswold.—In reply to Dr. Faxon, with the first tooth one coming next to the gold crown, there is a difficulty of displaying the box and not displaying gold, but the ingenious dentist can generally overcome that. We use, wherever possible, rubber caps, and, at the most, display only the top of the box, which looks like a gold filling in the tooth, especially if it is built up a bit with gold. In very short teeth we might have to use a grinding surface. By the use of a diamond disk you can generally overcome this difficulty without much trouble. This system is not supposed to be universal in its application any more than any other; it is a place, and that is where the teeth are fairly long.

Dr. W. H. Stowe, Boston, Mass.—I have only seen this system of Dr. Griswold's within the past few days, but not being very familiar with it I looked over the circular I received very carefully, and it convinced me that it was a very good thing; and a few days after that I showed it upon the doctor and he showed me his models and explained it fully, and after a careful consideration we decided that it was an excellent thing. I became so much interested in it that arrangements have been made whereby we will act as his agents, and be able to furnish the dentists with these appliances complete with any parts, as they may wish. We will also be able to teach them how to use the appliance and enable them to do this work for themselves. Before Dr. Griswold leaves the city I shall make it thoroughly familiar and conversant with it and I have no doubt that it will help out in a great many difficult cases.

Dr. Griswold.—In reply to Dr. Baker, my experience

limited. The first case was an emergency case, the only thing my patient would think of letting me try, as he would not have a bridge or wear a plate, but this and Dr. Payne's work led me to think of and try and perfect the work from a mechanical point of view. It was purely experimental, but are we not warranted in making the experiment, when, as I said, we are not doing any permanent injury, even if it is a failure? In conclusion, I do not know the name of the gentleman who said he did not wish to criticise me, but what I want is criticism, and it is only through it that you are able to perfect anything. There is no question but that the U-springs can be boxed so that they will hold any denture without posterior attachments so they will not drop or raise up at the heel. I have two cases in the mouth of Dr. Fillebrown's niece which have been worn for nearly six months with comfort and satisfaction. That is one great advantage of the work, the ability to hold that class of cases firmly.

I thank you, gentlemen, for your courteous attention.

WALDO E. BOARDMAN, D.M.D.

Editor Massachusetts Dental Society.

Editorial.

CONFERRING HONORARY DEGREES.

IN the March number of *Items of Interest* the editor publishes a letter from Price Cheaney, M.D., D.D.S., of Dallas, Tex., in which he says, "It is the need of some arrangement by which the large number of old practitioners who have devoted a great part of their lives to the profession of dentistry, but who, through the fault of circumstances, have never been able to graduate." He recognizes the difficulties surrounding this whole question, but he makes the following suggestion: "Let the National Association of Dental Faculties appoint an examining committee from their Association, not having over one member from any one college, to meet at the same time or directly before or after their meeting; and let them examine applicants for advanced standing and give certificates admitting to the second, third, or fourth years, as the circumstances

may warrant, and let this certificate be accepted by any school of the Association."

The editor, in replying to this letter, says, "We may pertinently extend the sphere of this discussion to ask why it is that honorary degrees in dentistry have been discountenanced. Great universities are constantly conferring honorary degrees in Arts, Letters, Theology, and Medicine. Why, then, should it be dangerous to confer degrees in dentistry?"

The question that Dr. Cheaney propounds is a very old one, and has caused more heart-burnings with the older practitioners than the more uncomfortable hours in the older faculties than the moderns. The men of the present generation of dentists have any knowledge. From the time of the organization of the Baltimore College of Dental Surgery, in 1839, and for twenty-five years thereafter, nothing was heard of this question of college degrees. The older men had the control of the dental organizations, and, with the exception of a few with the medical and dental degrees, they had all received their dental education in the laboratory. The colleges were but few, and the number of graduates was so small that they had failed to produce a marked impression upon associations or upon dental literature. Then the handwriting on the wall came as a prophecy to these men, and, translated, it meant to them, Laws will be passed in all the States of the Union, and this will mean an increase in the numbers of the student body, and in a few short years the influence will have departed. At once began a demand upon the then existing dental colleges for honorary degrees, and the number of colleges was increasingly growing as years were added to years.

It was recognized by some of the schools that dentistry occupied an anomalous position as compared with the older professions. They had centuries behind them. The schools of theology, law, and medicine were hoary with age, but dentistry had but a quarter of a century of dental college training. It was not a profession that had scarcely reached the degree of an art. It was, therefore, regarded as important that the scattered elements should be brought together and fused, as it were, into a homogeneous body. It was well understood that the majority of men practising dentistry began with the laboratory as the basis of training. Colleges were not, neither were there any laws prohibiting a man from opening an office and practising to the extent of his knowledge. Some were not satisfied with their limited acquirements, and aimed to im-

in various ways, but the sporadic nature of these efforts availed but little to elevate the general mass. Then came the period when the increasing number of graduates roused antagonism not only unpleasant individually, but which threatened to be a serious set-back to college training.

The momentous character of the question at issue forced the faculties to consider the advisability of perfecting some plan by which the antagonistic elements could be made to feel that they were a portion of the dental profession. The educational part of dentistry occupied a peculiar position. Some action was required to harmonize matters, but what that should be remained an unsolved problem. The conferring of honorary degrees by wholesale could not be thought of in this connection. It was opening up a traffic in diplomas, or, if confined to the few distinguished, it meant the charge of favoritism. Some schools took this course and many received this degree; others refused.

The Pennsylvania College of Dental Surgery, with which the writer was connected, adopted a different method. The faculty carefully and anxiously considered the question in its relation to the profession. It was finally decided to make examinations upon all the subjects of the curriculum as the basis upon which diplomas were to be granted. When this was made, an open notice was given in the dental periodicals that those having had fifteen years of practice were entitled to come up for an examination, and, passing this, the degree of Doctor of Dental Surgery would be conferred. A considerable number availed themselves of this privilege. It was not supposed that these men could pass the then students' examination, but it was presumed that they could show a general knowledge in the foundation studies. The disappointment was, therefore, great when it was found that, with a few exceptions, the knowledge possessed was confined entirely to practical subjects. This settled the matter, and all attempts to confer the degree upon this class were abandoned.

From this period began a bitter war upon the colleges. There was at this time a large majority of the practitioners in this outside class, and these were naturally antagonistic. They could not enter the schools and spend two or three years, and they could not matriculate upon advanced standing. Thus the matter stood when the Association of Dental Faculties was organized in 1884.

That part of Dr. Cheaney's article in which he advocates an

examination is answered by the historical facts as related. It be far worse to-day were such an examination attempted. Even graduates of twenty years ago could not pass the examinations to students at the present period, and when the course is increased to four years their case will be hopeless for all future time.

The Association of Faculties early considered this question. Some of the colleges then desired the power given them to confer the degree upon several men distinguished in dentistry. It was recognized by the Association that the honorary degree was being removed from the sale for money of diplomas, and the applications were negatived; but notwithstanding this antagonistic reaction these applications were repeated, and in one instance conferred without consent of the organization. The question was finally taken up and settled by the adoption of the following rule: "No college connected with this Association shall confer any degree or honorary which is usually granted in due course of study and examination. All former rules on this subject are hereby repealed." It is, therefore, hopeless to expect that this body will ever open the door to any degree, except it be honestly earned, and if it should at some time so far forget its duty to the profession as to repeat the error of law, the National Association of Dental Examiners, without further delay, would have something to say of a not very agreeable character. From present indications there is no prospect of this being effected, nor is there any pressure in this direction. The men of the past are gradually being replaced by graduates, and it cannot be long before all those who, without degrees, made the splendid figure in the profession of dentistry upon practical lines will have been replaced from works to a higher reward. When the time comes that the man in practice with the recognized diploma, may it not be a reasonable hope that then the commercial habit of thought, engrafted upon dentistry during this developing period, may be changed to the true conceptions and the true standard of professional life be established? It is from this want of high moral purpose that the dental profession suffers principally to-day. The trade journal naturally looks at all things from one standard,—trade competition. The man without a diploma stands no chance in practice with the man with a diploma. We may regret the unfortunate condition of this man, but it belongs to the age of beginnings. It is an honorable period when no one venerates the man of the past more than the writer, and when he recognizes the fact that evolution is iconoclastic. The

fondly cherished are broken on the wheel of progress, and from the fragments are developed the new thoughts, the more perfected race, and the more worthy profession. To accomplish this dentistry must never return to the honorary degree. It is the badge of incomplete education.

The editor of *Items of Interest* is mistaken in supposing that the higher medical schools grant honorary degrees. So far as the writer is aware, professional degrees are no longer conferred. The time will surely come when the self-respecting man will decline to receive any honorary title, come from what source it may. The whole question of granting honorary degrees by our great universities requires re-examination; but whether this be done or not, there should be no backward steps made from the advanced position of the Association of Faculties upon this question. Dentistry is too great, too noble a profession to be cheapened by any short road to its highest honors..

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

THIS Association will convene at Saratoga, N. Y., June 10 to 13 of the present year. Upon another page is published the very full programme of the Section on Stomatology. From the reputation of the writers of papers, there is assured an interesting meeting. Saratoga has many advantages as a place for the meeting of scientific bodies. Its quiet beauty, without extraordinary attractions to draw off the members, is not the least of these, for those in the habit of attending such gatherings know full well that interesting meetings are not usually held in places where there is much to enjoy outside of convention work. Saratoga has no lack of these, but not sufficient to draw members away from the severer labor that called them together.

Domestic Correspondence.

LETTER FROM NEW YORK CITY.

NEW YORK, April 7, 1901.

TO THE EDITOR:

SIR,—“Some Popular Errors about Microbes” was Dr. J. De Lisle’s subject before The New York Institute of Stomatology at its regular monthly meeting, held at Dr. Hoag’s office on March 27. A paper of this character coming from one who was associated with Professors Roux and Metchnikoff, Paris, in bacteriological research, excited unusual interest. After explaining that there were seven hundred different species of microbes, out of which forty were considered pathogenic germs to the animal kingdom, and thirty-one dangerous to man, he pointed out some of the erroneous notions regarding microbes, also the protection which unabraded skin afforded against them. He dwelt at some length regarding the employment of serums for the prevention of danger from microbes, and also the possibility of the employment of serum in the future to combat diseases of microbic origin. He spoke of the advisability of using the antitoxin tetanus serum in instances of fear of infection from tetanus bacilli indicated its use at the onset of suspected infection, for, as the doctor said, the tetanus being developed from the spore, or seed, as it were, required a certain number of days to develop after the wound was healed or exposed to the light and air, hence the extreme importance of early administration of the antitoxin serum in indicated instances.

Experiments were cited where guinea-pigs which from birth were reared in a sterilized atmosphere, with sterilized food, only survived thirteen days, here pointing out the importance played by bacteria in preservation of life itself. He also pointed out the danger of over-antiseptic treatment, wherein the surrounding tissues under such treatment were robbed of their recuperative powers, thus retarding the healing process. The question was ably discussed by Dr. Hopkins, of Boston, and others, and the vital question as to the proper disinfection of dental instru-

was discussed. A one to five per cent. of carbonate of soda in boiling water to prevent rusting was recommended by Dr. Dawbarn as a safe, economic, and reliable method. Other important matters were discussed, after which the meeting adjourned and a collation was served.

On March 11 Dr. Goldan, of New York, read a paper before the First District Dental Society, on "Nitrogen Monoxide in Combination with Oxygen for Anæsthesia." His method of administration was carefully explained. The advantage claimed for the combination over the plain nitrogen monoxide was that of doing away with cyanosis, and consequently more natural and normal breathing during the operation; the percentage of oxygen used was from eight to fourteen per cent. of nitrogen monoxide. The short tube was preferred in the administration, for Dr. Goldan thought that irritation of the respiratory tract was in a measure due to the respective gases passing from the cylinders through the long tube to the mouth. Among those who took part in the discussion was Dr. Hasbrouck, who, after commending the excellent features in the paper, still believed in the use of nitrogen monoxide with the atmospheric air. Dr. Hatch, in favorably considering the subject of discussion, stated that its practice had been pursued both here and abroad by others, and also that chloroform as an anæsthetic was considered by the medical profession as being preferable to ether in its administration in regard to children. Others followed in the discussion.

A resolution passed by the National Dental Association in 1900, in relation to examination of school children's teeth, was acted upon, this society co-operating with the State Dental Society in the matter. The meeting then adjourned.

Dr. F. T. Van Woert, of Brooklyn, read a practical paper, illustrated with stereopticon views, before the New York Odontological Society, on March 18, at their regular monthly meeting, in which was clearly demonstrated the necessary steps taken for the production of the X-ray picture; also setting forth the great value of the X-ray in diagnosing cases in certain instances. A subject of the practical value of this, and requiring so much illustration in the description of it, is only truly appreciated by personal attendance at a meeting, as those present upon the above occasion would testify. Suffice it to say, the X-ray has come to stay in the dental profession, and as Dr. Morton, in speaking later in the evening,

remarked, the possibilities of the X-ray as a therapeutic agent are very great, and no doubt marked developments along this line in this direction may be looked for in the future. The progress that has already been made with some wonderful results in the therapeutic action of the X-ray was discussed. The intense burns arising under certain conditions, with the slow process of healing, due undoubtedly to the effect of the X-ray upon the arteries or blood-vessels in affected parts, was also brought forth, Dr. Dwight M. Clapp, of Boston, and others joining in the discussion, after which the meeting adjourned.

LOCHINVAR.

Miscellany.

TO BEND A CROWN-POST WITHOUT STRAIN ON THE CROWN.—Grasp the post with a pair of crown contouring pliers. The convex jaw of the pliers forces a portion of the post into the concave jaw, and thus bends it without danger to the porcelain crown.—*Pacific Medical Journal*.

BELL-SHAPED CROWN, TO BE APPLIED WITHOUT TRIMMING THE TOOTH.—The following is a concise description of an original and clever device of Dr. McDonaugh's.

In the molar to be crowned, measure the distance from the highest cusp to the largest part of the swell of the crown, then from this point to the neck, then the circumference at the largest part of the swell. (The crown is made in two sections, an upper and a lower, corresponding to the above measurements.) Make the lower section of pure gold and to fit only at the swell of the crown. The upper section is made of 22-carat gold and is accurately adapted to the tooth. Place in position on the tooth. On the lingual side pinch the gold, making it fit accurately at the neck. This is comparatively easy, on account of the lower part of the crown being made of pure gold. With curved shears cut away the part pinched up. Remove the crown. Unite the crack made by cutting off the pinched part by placing over it and soldering to it

a fairly wide and thick piece of platinum; two pieces of square post-metal will answer the purpose. File this to a dovetail. Make a female part of the dovetail with overlapping flanges of pure gold, tightly adapted to the lingual surface of the crown. Saw a slit up the platinum dovetail, and the crown is ready for setting.—*Dominion Dental Journal*.

A NEW METHOD FOR CLOSING SUPERFICIAL INCISED WOUNDS.—

Dr. Arthur G. Bretz (*Medical and Surgical Monitor*, December, 1900) believes the method very simple, and describes it as follows:

Given a wound on the forehead, for instance, after cleansing and preparing it in the usual way, dry the adjacent surface thoroughly and then apply a piece of adhesive plaster on either side of the wound, the size of the plaster and the distance from the edge of the wound to be determined by the length and character of the same. However, it should be of sufficient width to give ample area for adhesion, which should be not less than one-fourth of an inch and not nearer the wound than one-fourth of an inch. Raise the inner edges of the adhesive strips and insert interrupted sutures through them instead of through the skin, draw together, and tie. This coaptates the edges of the wound even better than stitches through the skin. The wound is then dressed in the usual way.

First, it prevents the painful process of inserting stitches, of which all patients have such a dread.

Secondly, it does away with the possibility of stitch-hole abscess and the trouble caused by particles of sutures being left in the wound on removing the stitches.

Thirdly, it prevents the stitch-marks, which always add to the unsightliness of the scar.

Fourthly, in cases of wounds inflicted by a blunt instrument, which caused bruised tissue immediately surrounding the wound, there are no stitches to tear out the friable tissue.

There is no puckering between the stitches; the first stitches coaptate the edges, and the others make the closure permanent. There are many other advantages besides those enumerated above.
—*Therapeutic Gazette*.

Current News.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

At the meeting of the Section on Stomatology of the American Medical Association, to be held at Saratoga Springs, N. Y., June 10 to 13, 1902, the following programme will be given:

1. Chairman's Address, Dr. A. H. Peck, Chicago, Ill.
2. "The Embryology of the Dental Pulp," Dr R. R. Andrews, Cambridge, Mass.
3. "The Histology of the Pulp," Dr. Vida A. Latham, Chicago, Ill.
4. "Notes on the Preparation of Teeth for the Microscope," Dr. Martha Anderson, Moline, Ill.
5. "Evolution of the Pulp," Dr. Eugene S. Talbot, Chicago, Ill.
6. "A Comparative Study of the Attachment of Teeth," Dr. Frederick Noyes, Chicago, Ill.
7. "Permanent Benefit resulting from the Correction of Irregularities of the Teeth due to Interstitial Gingivitis," Dr. M. H. Fletcher, Cincinnati, Ohio.
8. "Observations on some Recent Cases of Orthodontia, with Illustrations," Dr. E. A. Bogue, New York City.
9. "General Nervous Manifestations in Relation to the Jaws and Teeth," Dr. G. V. I. Brown, Milwaukee, Wis.
10. "Electric Ozonation upon Neuralgia," Dr. G. Lenox Curtis, New York City.
11. "Diagnosis," Dr. Jonathan Taft, Cincinnati, Ohio.
12. "The Modern Dentist from a Medical Stand-Point," Dr. William Knight, Cincinnati, Ohio.
13. "Chanere of the Lip," Dr. G. T. Carpenter, Chicago, Ill.
14. "Oral Hygiene," Dr. G. F. Eames, Boston, Mass.
15. "The Legal Status of the Term 'Reputable' as applied to Dental Colleges," Dr. Charles Chittenden, Madison, Wis.
16. "Autoinfection of the Mouth," Dr. G. L. Parmele, Hartford, Conn.

17. "Dento-Facial Orthopædia," Dr. W. E. Walker, New Orleans, La.

Dentists desiring to become members of the Section can do so by obtaining credentials from their State or local dental society and presenting them with the sum of five dollars to the Treasurer of the Association. This sum includes the Journal of the Association for one year. All dentists are invited to attend and take part in the discussions.

A. H. PECK,

Chairman.

EUGENE S. TALBOT,

Secretary.

MISSOURI STATE DENTAL ASSOCIATION.

THE thirty-eighth annual session of the Missouri State Dental Association will convene at Jefferson City, Mo., May 21, 22, and 23, 1902. The literary programme will be held in the Legislative Hall, and the clinics, beginning at ten A.M. the first day, will be held at the State Penitentiary, where an abundance of clinical material can be had.

A cordial invitation is extended to all reputable dentists to attend. Railroad and hotel rates have been secured.

The following is a partial list of the programme:

ADDRESSES AND ESSAYS.

1. Burton Lee Thorpe, St. Louis, President's Annual Address.
2. Wm. Everett Griswold, New York, "The Griswold System of Removable Bridge-Work."
3. Frederick Brown Moorhead, Chicago, "Alveolar Abscess: Its Sequel and Surgical Treatment."
4. D. R. Stubblefield, Nashville, Tenn., "Metallurgy."
5. J. D. Patterson, Kansas City, "Etiology of Dental Disease."
6. D. F. Luckey, D.V.S., Missouri State Board of Agriculture, Columbia, "Comparative Anatomy of the Teeth."
7. J. Robert Megraw, Fayette, "Dental Prescriptions."
8. Millard Lewis Lipscomb, A.M., Missouri State University, Columbia, "The Practical Application of Electricity in Surgery and Kindred Subjects."
9. S. C. A. Rubey, Clinton, "Some State Board Questions and the Answers they receive."

10. James W. Hull, Kansas City, "Conservatism in Dentistry."
11. Herman Prinz, St. Louis, "Some of the Newer Dental Remedies."
12. Charles Gilbert Chaddock, M.D., St. Louis, "Neurology."
13. W. W. Flora, Carthage, "Use and Abuse of Crown- and Bridge-Work."
14. Otto J. Fruth, St. Louis, Report of Committee on New Inventions and Appliances.
15. H. S. Vaughn, Kansas City, "Orthodontia."

CLINICS.

[The clinical work covers thirty-eight operations, distributed over pathological and practical cases, but too extended to be admitted in full in our limited space.—ED.]

GEO. W. TAINTER, Chairman, Jefferson City,
C. D. LUKENS, St. Louis,
J. C. PASQUETH, Mexico,

Executive Committee.

PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Pennsylvania will conduct examinations in Philadelphia, June 24 to 27, 1902.

For papers and further information, address Hon. James W. Latta, Secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP,
Secretary.

WILLIAMSPORT, April 5.

MISSISSIPPI BOARD OF DENTAL EXAMINERS.

THE Mississippi Board of Dental Examiners will hold its annual meeting in the city of Jackson, on Tuesday, May 27, 1902.

J. P. BROADSTREET,
President.
W. R. WRIGHT,
Secretary.

THE International Dental Journal.

VOL. XXIII.

JUNE, 1902.

No. 6.

Original Communications.¹

ADENOIDS IN RELATION TO STRUCTURAL CHANGES.²

BY F. PARK LEWIS, M.D., BUFFALO, N. Y.

You will pardon me if I begin my paper to-night with a few fundamental propositions which are doubtless known to every one of you, in order to make more clear and consecutive subsequent details which may not be so well known.

By adenoids we understand an hypertrophied condition of the lymphoid tissues, normally found in the vault of the pharynx, posterior to the nasal openings. In structure these tissues form a portion of what is known as the tonsillar ring, composed of the faucial tonsils on either side, the lingual tonsils, consisting of a number of enlargements at the base of the tongue, and the pharyngeal tonsil in the vault of the pharynx. In a normal condition this last, the pharyngeal, or, as it is sometimes called, Luschka's tonsil, consists of a number of closed lymph-follicles in the mucous membrane, surrounded by loose-meshed connective tissue. There

¹The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

²Read before The New York Institute of Stomatology, February 12, 1902.

is a soft variety of what is still called adenoids, which is predominantly an enlargement of this mucous tissue; when the connective tissue is in excess it is quite another thing. It has been deplored that either should be called adenoids, for not even the latter, or true adenoid, is an hypertrophy of the lymph-gland. Practically, it might almost as well be, however, for the contraction and hardening of the surrounding tissue cuts off the lymph flow as completely as if it were the lymph-vessels themselves that were affected.

It must be remembered that the lymphatic tract is the channel through which the nutritive elements of the blood are carried to their destination. The lymph in the human body is its life. It is the food of the cell. Upon its free flow is dependent the functional activity and the normal development of every tissue.

The lymphatic glands in the vault of the pharynx are part of a chain extending through the openings of the skull, carrying nutrition directly to the brain itself. Immediately above this region is the sella turcica, which contains the pituitary body. Those of you who have been following modern medical research will remember that in the strange and interesting condition called acromegalia, or gigantism, in which abnormal enlargement of the whole bony structure occurs, post-mortem investigations have discovered an enlargement of this pituitary body as a most constant feature.

The pituitary body is composed of two lobes, one of which is true brain tissue, and the other a lymphatic gland. The chain is continuous from the lymphoid tissue in the vault of the pharynx, by way of the arterial seats, to the substance of this gland itself.

Now, when we realize how profound is the disturbance of nutrition throughout the entire system, when the functions of the pituitary body are disturbed, it may be readily understood that any obstruction to the free flow of lymph through glands so nearly adjacent as those of the pharynx might seriously interfere in other ways with the processes of development.

A disturbance of function always precedes a change of structure; and if it can be shown that functional disturbances are produced in adjacent organs by hypertrophies of the lymphoid tissues in the pharynx and the post-nasal space, the conclusion is justified that in case the hypertrophies are allowed to continue, structural changes must follow.

Should these hypertrophies occur during the period of development in children, we are warranted in making the tentative deduc-

tion that where functional disturbances have been observed, interferences with development are likely to occur, as structural changes would in an adult.

Now, clinically the relationship between adenoids and deformities of the face, nose, and chest have been so constantly observed that the facial appearance has come to be accepted as a characteristic indication of the presence of adenoid vegetations in the nasopharynx.

Their relationship to some forms of ear disease, while often recognized, has not yet received the attention which its importance demands, while the connection of hypertrophies of this nature with the eye, and its development, has scarcely received any consideration whatsoever. Indeed, I cannot find that this aspect of the subject has been studied at all.

The typical adenoid face is well known. The enlargement of tissue obstructing the posterior nares so narrows the caliber of these openings that breathing is possible only with the mouth partially open. The upper lip is commonly shortened, the lower lip droops. This not only gives a stupid expression to the face, but the mental processes are actually slow. The child finds difficulty in concentrating the attention on any subject, and reflex symptoms of the most varied character are not uncommon. (Among these may be mentioned the night terrors from which children suffer, wetting the bed, persistent headaches not relieved by ordinary measures, marked catarrhal symptoms, etc.)

The form of skull which is found so commonly in cases of this character is that in which the upper jaw—sometimes, indeed, the lower as well—is narrowed laterally. The face is compressed from side to side, the *bony palate* forms a high arch. The teeth are so crowded that they find no room for regular eruption, and to the unpleasant rat-shaped face is added, therefore, the disfigurement of an ill-shaped mouth with irregular teeth. The high arch constituting the bones of the roof of the mouth presses up the septum of the nose, causing it to deviate, and laying the foundation for future obstructions in the nostril. In a word, the mechanical fact of crowding the face together throws all the bony structures out of their true relationships, and is the foundation of disturbances of a most serious character.

Much thought has been given to the manner in which this peculiar conformation occurs, and the conclusion seems to have been

that the obstruction of the nose by the adenoids, necessitating mouth-breathing, has gradually drawn up the, as yet, plastic structure of the roof of the mouth, until this conformation has been produced. That this is not a complete explanation, although it may be a contributing element, is shown by two facts: first, that the condition is sometimes present at so early an age that it could not have been produced by suction, as this process would necessitate that the condition must have been congenital; and secondly, that it has been exhibited in branches of families to such an extent that the element of heredity must enter largely into it.¹

A case that came under my observation recently was that of twin children, in one of whom this facial distortion was very conspicuous, while in the other the face was broad and the jaw was normal. The first child was a mouth-breather from birth. The mother assured me that this child was the elder, and had been born low in the pelvis, leading to the possible inference that the condition of the other child, by continued pressure, might have changed the shape of the skull. The facial conformation characteristic of this condition frequently is found in a mother and her whole family of children. It would be interesting to know whether the position in the pelvis might not sometimes be instrumental in producing the narrow head, which is the foundation of the whole condition.

But while all this affords a fascinating field for speculation and theory, it is not essential that we should know *how* the condition is produced, it is sufficient to realize that a condition which crowds the jaws that the teeth have not sufficient room for eruption, may also so impinge upon the lymph-channels as to produce strangulation of these structures, with subsequent malnutrition and the abnormal development of connective tissue which we call adenoids.

Therefore, although the consensus of opinion seems to have been that suctional breathing, the result of adenoids, has been the cause of the narrowed face and head, with all the attendant symptoms which we have been considering, I cannot but think it more probable that the reverse is the fact,—that the narrow head and face, having been produced by any means whatsoever

¹ That congenital adenoids are not infrequent is shown by Chaureau, who reports having made fifty operations on new-born children. *Gaz. hebdom. de méd. et de chir.*, April 8, 1900.

naturally result in obstruction of lymph-passages, with all the varied and unfortunate phenomena which such obstruction implies.

(I should say in parentheses, that the narrow face with its attendant obstructions is not the only thing that could crowd upon the delicate developing tissues until adenoid growths result. But cases where abnormalities of the face are not present would be the concern of the general physician, not of the dental surgeon, and therefore will not be considered in this paper.)

If my theory is correct its importance to the dental profession is obvious.

By an early expansion of the jaw, not only is the unpleasant rat-mouth moulded into better form and the teeth given room to develop properly, the bony arch lowered and the lips thus brought into place, the nasal septum straightened and the features given a dignity and the mouth an efficiency that they would otherwise lack, but the lymph-channels are unstopped. The first of these are chiefly mechanical results, the latter is concerned with the essential elements of structural nutrition.

The different organs that may be affected when nutrition is interfered with, and the various ways in which deviations from the normal occur, interest chiefly, of course, the general physician. But the whole subject, even pushed to somewhat wearisome detail, is of importance to the dental surgeon, as it urges upon him the necessity of recognizing the less striking of these cases.

Then, when recognized, in instances where the facial deformities are not extreme, or but slightly apparent, there is sometimes difficulty in persuading the parents to submit their children to the measures necessary to produce orthodontia. The process is a long and expensive one, and entails not a little discomfort, and the parent is likely to urge postponement, hoping that the necessity for the operation may disappear with growth. A knowledge of the remote and serious difficulties which may be the outcome of this condition will afford the surgeon in the several details so many weapons for the defence of his position.

One of the most obvious effects of adenoid obstructions in the vault of the pharynx is the mechanical interference with the ventilation of the middle ear through the Eustachian tubes. According to the location of the adenoid growths, either one or both sides may be involved. The necessity of an unimpeded passage through

the nose, as related to the ear, may be immediately demonstrated, in a normal condition, by the simple experiment of closing the nostrils. This may be made more clear by at the same time trying to swallow. We find this same process emphasized by a common cold in the head, which gives the sensation known as a stuffy feeling in the head and ears.

Now, with enlarged tissues in the throat it requires a very slight inflammation to so interfere with the mouths of the Eustachian tubes as to almost completely shut off the entrance of air. The continuity of tissue readily allows an extension of the inflammation to the middle ear; the drum membrane also becomes inflamed. The swollen tissues of the tympanus ultimately fill with pus, and the pain is excruciating until the membrane is ruptured or an opening artificially made by the surgeon's knife, and we have all the classic symptoms of otitis, with the possible resultant conditions of a chronic otorrhœa, mastoid involvement, cerebral abscess, sinus thrombosis, or even general septicæmia.¹

I think it rarely happens, when children have repeated attacks of earache, that investigation will not show the presence of adenoids.

The continued obstruction of the Eustachian tubes without inflammatory complications develops a progressive form of catarrhal deafness, for which no relief can be obtained so long as the obstructions continue.

This is a kind of chronic deafness, the origin of which is frequently overlooked. In the course of time organic changes occur in the structures of the middle ear, such as retraction and thickening of the drum membrane, adhesions at the joints of the ossiculæ, and, in some cases, involvements of the nervous structures of the inner ear itself, with permanent narrowing of the Eustachian tube. It is, of course, then too late for the removal of the cause to produce beneficial results. With a knowledge of these facts it is obvious that no case of deafness in a child should ever be allowed to continue without a thorough examination of the throat to determine whether obstructions are present or not.

The large number of deaf mutes in whom adenoid vegetations are found to exist would seem to justify the conclusion that these

¹ A. Plotier found twenty cases of adenoids in thirty-eight cases of death from diphtheria. *Laryngoscope*, August, 1899.

obstructions were either congenital or prenatal, and that deafness being present at so early a period allowed the unused ear structures to degenerate, while the brain centres for audition remained undeveloped.

The remarkable experiments of Urbanschitsch in the training of mutes with ear-trumpets would indicate that in many of these cases some degree of hearing might be secured by training the ear, if the auditory passages are free from obstructions.

Of course, it is only before structural changes have taken place that beneficial results may be anticipated.

Structural changes take place in a comparatively short time, when, added to disuse, we have a choking of the channels of nutrition. The presence of adenoids in the throat may, therefore, be responsible for structural changes in the ear, and not many years be required in the process.

This makes evident the necessity for careful diagnosis and prompt care of young children when these conditions may exist.

It is an accepted idea that adenoids left to themselves will atrophy at adolescence, but this is only partially true. The growth may, and probably does, shrink somewhat, but when connective tissue changes have once occurred, the adenoid persists, although the enlargement of the vault of the pharynx coincident with normal growth lifts the enlarged tissue so that it no longer obviously obstructs the nares, and while it may be producing disastrous changes its presence is often totally unsuspected.

I have myself removed large adenoids from a man thirty-five years of age, very greatly relieving his deafness in one ear. In the other tissue changes had occurred to such a degree that improvement of hearing was impossible.

It is the persistence of these unrecognized progressive tissue changes that lays the foundation for much of the incurable deafness of adult life. And when these are the result of abnormal growths, which may in turn be the result of abnormal mouth development, not only must the growths be removed, but the care of the jaws and teeth must not be too long postponed.

Now, I have reason to believe that the obstruction of the flow of lymph carrying nutrient elements to the ear has possibly as much to do with the results as the mechanical obstruction in shutting off the Eustachian tubes. But upon this subject the final word has by no means yet been said.

When we speak of the eye, the dental relationship would seem to be less apparent, but, as a matter of fact, we find here similar conditions, giving rise to equally marked results.

And if my theory is correct, that distorted facial development produces adenoidal growths, and that adenoids are responsible for various eye troubles not hitherto traceable to any direct cause, the relationship is discovered to be intimate.

If, as was shown in regard to the ear, functional difficulties arise in conjunction with adenoids and disappear on their removal, and we remember that structural changes invariably follow a persistent aberration of function, we may say that here too, similar conclusions follow like premises. That is to say, structural changes in the eye may occur as the result of lymphoid hypertrophies.

And furthermore, if these obstructions to normal nutrition occur during the plastic period before development is complete, they may interfere with the normal growth of the organ, and arrested development be the result.

No one, two, or three cases would be sufficient to prove the relationships of adenoids to disturbances of the eyes, but when over and over again cases that have evaded all ordinary medical or surgical measures have been immediately relieved by the removal of lymphoid growths, the causative relationship would seem to be demonstrated.

One of the commonest conditions which I have observed in this connection is that in which the conjunctiva is congested, the eyes weak and suffused, a condition for which local measures have proved in many instances totally insufficient, but which was at once relieved by the discovery and removal of adenoids.¹

A peculiarly interesting case came under my observation recently of a child having a persistent overflow of tears from one eye. The lachrymal duct was found perfectly normal, and the overflow, which had for several years resisted treatment, ceased within a week after removal of a small mass of adenoids that had been too slight to occasion the child any other discomfort.

Various weaknesses of the ocular muscles, for which suitable glasses and even operative measures have been unavailing, have

¹ Coppez and Snellen have both recorded frequent instances in which follicular conjunctivitis is associated with post-nasal adenoids. *Archiv. d'Ophthalmol.*, January, 1899.

regained their normal balance after the nasopharynx has been cleared.

Lauren's case, in which strabismus disappeared after an operation for adenoids, and Miles's cases of *æsthenopia*, which subsided after similar operations, lead directly, as do all of these cases, to a consideration of the development of the eye and the causes which may modify it.¹

At birth the eye of a child is in the same undeveloped conditions as are the other organs. As the child grows the eye develops, enlarges, and becomes functionally able to do the work which is required of it. This process of development extends normally through the growing period of the child's life. If for any reason it should be interrupted, the eye remains throughout life that of the child. It is then too flat, never having reached a full contour, and is called a hypermetropic, or over-sighted, eye. Such eyes are peculiarly prone to convergence, and are apt to be dull-sighted.

A laryngologist by the name of Ziem has recently made some very interesting experiments, that are most suggestive in this connection. He sewed up the nostrils of young rabbits, and found that on the side from which air was excluded the eye remained in a permanently undeveloped condition. In other words, it remained a flat or hypermetropic eye, while that on the opposite side reached its normal development.

Now, in my own experience such a large number of these hypermetropic and squinting eyes in children perhaps twelve years of age have been found in connection with lymphoid hypertrophies that it is impossible to believe the association accidental.

If it be true that the nutritive functions of the head are so profoundly impaired by nasopharyngeal hypertrophies, and if it be also true that these are again contingent upon corrigible deformities of the skull, I can only say again, if possible with still more emphasis, that as the responsibility in this class of cases often falls upon you, my friends of the dental profession, long before any developments occur which would bring them to the care of the general surgeon, the entire subject must be regarded as of an importance which can hardly be exaggerated.

¹ Thomas cites a case of a child of ten with divergent strabismus and mental disturbances following meningitis during infancy. After curettage of the nasal pharynx for adenoids the strabismus entirely disappeared. *Presse Méd.*, October 29, 1898.

THE DENTAL PROFESSION IN RELATION TO THE GENERAL HEALTH.

BY ALEXANDER MACLEOD, D.D.S., BOSTON, MASS.

IN the days of the ancient Greeks and Romans, when the gods of mythology received the homage of the cultured and the learned, *Æsculapius*, the god of medicine, was honored with profound respect. And down through the channel of the centuries the art of healing by the practical application of the knowledge of medicine has been a potent factor in the welfare of the human race. From the comparative crudeness of early times the evolution of surgery can be traced through its vicissitudes, until to-day it has become almost a distinct science, overcoming and ameliorating many of the ills to which humanity is heir. Of a comparatively recent conception is the profession of dentistry, although we do not claim that it was either unknown or unpractised by the ancients. It is a natural product of the great dual science of medicine and surgery, combining many of the elements of both, and daily becoming more recognized by the professions and the laity as an ever-broadening scientific specialty. When we consider that the history of dentistry in America, as a specialty, brings us back scarcely more than half a century, the progress that has been made is abundant evidence that the world requires the service which it gives.

In America was established the first institution devoted exclusively to instruction in dental science; and in America the profession in all its branches has made the greatest progress. The extraordinary advancement witnessed in recent years, however, is not due so much to improvement in technic as to the extending of the field of dental education to embrace not only a study of the physiological menaces to the general health originating in the oral cavity, but also in exacting from the dentist, by the higher institutions of learning, a more general knowledge of the nature of diseases outside the sphere of his profession. In this way is he not only enabled to exercise greater personal protection, but to extend the benefit of this knowledge to all with whom he comes in professional contact who may stand in need of the same.

The greater length of time generally required for his ministrations often brings the dentist in closer relations with his patients than is either the physician or the surgeon. The results

of his labor oftentimes go towards restoring to normality unsightly defects of nature which interfere with the charms of natural attractiveness. The consequent intimacy of interests thereby created,—on the one hand, the satisfaction of realizing the successful application of professional skill; on the other, the grateful appreciation of beneficial results,—begetting mutual confidence, make it easier for the dentist to study idiosyncrasies, which may lead to the discovery of obscure symptoms of disease that might easily escape the notice of the family physician.

In the minds of the greater number of even the intelligent laity the physician and surgeon are looked upon as a resource to be considered contemporary with illness, while dental operations are generally performed while in comparative health; thus, invaluable advice may be offered in special cases, with less liability to embarrassment, which would give the physician earlier opportunity to combat impending physiological derangements. From this it is not to be inferred that an invasion of the territory of the medical practitioner is suggested or approved, but to demonstrate the far-reaching effect that the tendency to widen the scope of dental education may have in aiding to promote the general health.

The mouth is the great portal through which enters not only the means by which life is sustained, but also the greater number of the germs which act to assail the integrity of the constitution and the welfare of the human organisms; and on the physiological ability of the organisms to withstand the assaults of these germs depends the health of the individual.

Digestion is one of the most important functions entering into a consideration of the bodily health, for the great design of the food we take is to give nourishment to the body; on digestion, therefore, by which the food is reduced to a soluble condition, depend the absorption, circulation, and assimilation of this nourishment necessary to support the various tissues. Under normal conditions these operations are conducted silently and harmoniously, with marvellous delicacy and completeness, and without that friction and consequent loss of power which attend the working of the most perfect machinery of man's invention.

The first step in this all-important process begins in the mouth, and proper mastication is a most essential factor in the continuation of normal conditions. This preliminary function will appear the more important when we reflect that it is the only one which we

can regulate by the will, as the subsequent acts of digestion are involuntary and unconsciously performed.

Nature has endowed humanity with perfect means towards the end of natural mastication, but the nature of the food materials, which the teeth are designed to work upon, render the strictest attention necessary; and the skill of the dentist is invariably required in order that their integrity may be maintained or restored. In the famous history of Don Quixote, the hero of La Mancha, it is related that at the end of one of his great battles, wherein he was, as usual, conquered, he found himself wounded in the face by a violent blow from a stone, and grieved to find that with it he had lost one of his teeth. Reflecting a while on this unhappy accident, he sagely remarked that to lose a molar was very much like losing an old friend. And it is an important matter, in view of their relation to the general health, to see to the welfare of the molars, that they may really become *old friends*.

It is manifestly impossible here to enter into even a superficial generalization of the ill-effects accruing from neglect of the teeth and general oral hygiene. Some of the most distinguished stomatologists and bacteriologists in Europe, as well as in this country, have frequently called attention to the fact that septic conditions of the oral cavity are etiologic factors in many diseases of the general system. It is not at all uncommon to be able to trace directly to the unhealthy conditions of the mouth and the teeth local diseases, as of the eyes, ears, nasal cavities, or vocal organs; while in not a few cases the mucous membranes are deranged from the lips throughout the alimentary tract. Certain constitutional diseases of the most virulent type are primarily manifested here, and precautionary knowledge is an absolute essential of the higher duties of the practitioner to his patient. "In relation to the whole group of internal conditions caused by pyogenic organisms there is a wide field of preventive medicine open by the exercise of oral antiseptics, a field that can be worked in with the most surprisingly satisfactory results, alike by the physician, the surgeon, the dentist, and the patient." The great responsibility of the dentist, in relation to the general health of the latter, becomes patent to the most casual observer; not in treatment only, but in educating the patient to a higher appreciation of the principles of modern antiseptics.

In the administration of anæsthetics, when prolonged operations

are necessary, it is as incumbent upon the dentist to first ascertain the physical condition of the patient as it is upon the physician or the surgeon. Such examination may reveal lesions of heart, lung, kidney, etc., of which the patient may be entirely unconscious; and the knowledge and advice of the dentist may here suggest the "ounce of prevention," which with prompt attention may arrest in the primary stage that which would develop serious consequences. Procrastination is an inherent quality of human nature, but the intelligent mind is quickly aroused to the importance of promptly encompassing self-preservation.

"We have no scales by which we can weigh our faithfulness to duties, or determine their relative importance in God's eyes." That which seems a trifle to us may be the secret spring which shall move the issues of life and death.

The time is long past for considering dentistry from a mechanical stand-point alone. This is an age of specialties, and dentistry is a particular specialty of that study which embraces the whole human system. This is being recognized by the foremost institutions of the country; and the higher education of the dentist, by the general extension of the curriculum, is receiving the attention which its importance deserves. The goal of human achievement was never so high as to-day.

Always the future grows out of the past, but we are here to shape that future, and we must shape it intelligently, wisely, efficiently. There is no limit to the good that well-equipped professional men and women can do save the limit they themselves make by their lack of faith in God and man, God's image. In the words of Hamlet, "The readiness is all."

DEAF MUTES.¹

BY E. A. CROCKETT, M.D., BOSTON, MASS.

I FEEL a little timid, gentlemen, in presenting an otological subject to a dental society, the more so because I think in the minds of a great many people the old impression of the curability of disease of the ear exists very much as it did thirty years ago. The stand-point of the average person at that time I think is very

¹ Address before the Harvard Odontological Society, November 21, 1901.

well illustrated by the story which is told at the Eye and Ear Infirmary, to the effect that one of the surgeons of the eye side goes over to a surgeon of the ear side, and says, "Doctor, I have been getting deaf for about a year, and I am really getting quite noticeably deaf now. I would like to have you look in my ear." And so the ear surgeon looks in the eye surgeon's ear, and the latter says, "Is it wax, doctor?" "No, it is not wax." "Well, that is all; good day."

I think there is no department of otology that illustrates this point more clearly than deaf mutism. There are about fifty thousand absolutely deaf individuals who have been educated at special schools for the education of the deaf, either by the lip method or by the finger method. That is, there are fifty thousand persons in the country who are absolutely unable to hear, and living in competition with persons of good hearing.

Some two years ago I became interested in the subject, and started to make a careful examination of the different mute schools in the State of Massachusetts. There are, in the different mute schools in this State, about three hundred pupils. There is the Horace Mann School in Boston, which is a day school, and the Clark Institute in Northampton, which is a boarding school; both are State institutions, although the Horace Mann is in the same general school system as the public schools of Boston.

I examined in the course of one winter about one hundred and thirty different mutes, largely with reference to the causation of the trouble, and I found that many of the one hundred and twenty-five or thirty had never been seen by an aurist before. That is, they had been sent directly to the institution for education by a special method,—in that school the oral method,—and denied the right of attendance at the public schools; and it had not been ascertained whether the deafness which they had was curable or incurable, or what the form of deafness was in each case. That was distinctly a hardship. Of course, we know there is a medical inspector to every public school in the city of Boston, and there was a medical inspector at that school, but he was merely a general physician and had no special knowledge of the ear, although every individual in the school, of course, needed treatment in that line. In the Clark Institute at Northampton, I think (although I have not yet examined those children), very much the same state of affairs exists.

In examining the children, I found, very much to my surprise, that there were eight or ten cases there that could be made to hear relatively perfectly well. I mean by that that with comparatively little treatment they could be made to attend the public schools, and would be able to hear, probably at the end of this room, what I am saying in this tone of voice. Fifty per cent. of the entire school were deaf from adenoids in the nasopharynx, which had either not been operated upon, or operated at too late a period to furnish relief. This fifty per cent., therefore, we may count as absolutely curable had they been treated at the proper time.

It is interesting to compare these statistics with the earlier statistics of deaf mutism in this country, and with the foreign statistics, particularly those of Norway and Sweden.

Fay has compiled a most elaborate book, and goes into a detailed account of some eight thousand cases of total deafness, and endeavors to prove that deaf mutism is largely an inherited condition. That is, he claims that twenty-five to thirty per cent. of the deaf mutes are cases of directly inherited deafness, and therefore form a special class in the community absolutely beyond help. And also his statistics prove that marriage of deaf persons, particularly marriages of deaf mutes, should not be allowed, or, at least, should be frowned upon by the profession. Among other things I think he claims that where two deaf mutes marry,—which is becoming very common in this country, as they are educated in coeducational schools, fifty per cent. of the children are deaf mutes also. That is a pretty large proportion. I think there have been about two thousand marriages of deaf mutes up to this time. Certainly all the European statistics seem to agree with Fay's standing upon this subject.

With that in view, I proceeded to examine all these cases in the Horace Mann School with great care,—first, as to whether they were hereditary or not; secondly, as to the exact amount of deafness present; and thirdly, as to whether they could be cured or not. As to the cause of the deafness, as I said, it is found that fifty per cent. come from adenoid disease, which is exceedingly common in the northern parts of this country and in northern countries all over the world. The fact that that is so large a factor accounts for the large amount of deafness in the northern portions of Europe, where the proportion of deaf mutes is exceedingly large.

Of the remaining fifty per cent., some ten or fifteen per cent. in this State were due to an epidemic of cerebrospinal meningitis, which we had some five or six years ago. At that time something like fifteen or twenty additional pupils came to the Horace Mann School. The deafness resulting from this disease will always be absolutely incurable, but never hereditary. A considerable proportion of the remainder came from the injuries of the ear-drum and middle ear from the discharging ears of scarlet fever and diphtheria in infancy, a condition curable had the process been treated in the beginning.

The remarkable part of the statistics to me was that out of the entire number of cases examined there were only two which could be considered to be hereditary, and those two were children of the same family, as they were twin sisters. In those two children no amount of investigation and questioning of the parents and examination of the children could give a cause for the deafness other than that it was presumably hereditary, as it was noticed at an early age, and the children had no disease in infancy which could account for it. So out of the total number of cases, only those two had inherited the affliction, and only those two could transmit it to their children, had they had any. This puts a totally different view upon the subject from the stand-point of statistics.

There are two other diseases particularly productive of total deafness in early life: one is inherited syphilis and the other bronchopneumonia in infancy.

It therefore becomes particularly important to notice the hearing of young children and to treat the affections of the auditory apparatus in young children as early as it can possibly be done. As a matter of fact, it is the experience of nearly every aurist that children are very rarely brought in for treatment of deafness before three or four years of age. The parents will notice that a baby has not begun to talk at the usual age, and by the time the child is two years old they begin to get a little bit worried about it; but they usually wait until the child is three before they come to see us. It is very important to determine as quickly as possible whether the failure to talk is from a mental lesion, from an ear lesion, or from delayed development. You will see children sometimes that at the age of two and one-half years will not talk, and after that age will talk fluently. It is exceedingly easy, if you have a

chance to be with a child at all, to tell at a pretty early age whether they hear or not. If you only see the child once, it is pretty nearly impossible to tell accurately. If you are in the room with a child twenty or thirty minutes you can usually tell whether it hears or not, merely by watching its behavior to the ordinary sounds of the room, where if you try to test its hearing deliberately, and the child is strange to you, it will be absolutely impossible.

The particular thing you have to guard against, so far as my observation of the subject has gone, is the remarkable perception of vibration that all deaf patients have. For instance, it is interesting to see them instructing a totally deaf child in music, which they do by taking an ordinary piano and putting eight or ten children in a row with the fingers resting on the keys. The teacher will then run up the scale, and the children can feel the difference in the vibration of the different tones. So they can sing the scale, not having heard it at all. They simply receive the vibrations. It is a remarkably keen sense of vibration, developed to a very remarkable degree, and it makes it very difficult to test the hearing, for if you tap on the table, or slap your hands, or use any method of testing which has a perceptible vibration, the child will immediately show signs of hearing, where it does not hear at all. Consequently you should use sounds which, as nearly as possible, have no vibrations at all. The best test is the human voice.

It goes without saying that the only reason that nearly every child is mute is simply that it either has become deaf before the hearing period,—*i.e.*, before one or two years of age,—or else it has acquired deafness between the ages of two and five, and has forgotten what words it had already learned. Total deafness is almost unheard of. Of the entire one hundred and thirty children that I examined, there were only two or three absolutely deaf; nearly all could hear certain tones of the human voice, or some portion of the musical scale, usually in the upper portion. That is, some portion of the auditory nerve remained, and that is a very important point in the education of the child. If you can once give them an idea of what a tone really sounds like, you can get them to place the tone and use the voice better. It is of the greatest importance in the young child to define the exact amount of hearing and to bring it as quickly as possible to its best point of hearing.

There is one very interesting point about these children, and that

is that they learn lip reading almost instinctively. I found three children who had been two or three years in the public schools and had advanced with the rest of their class, without the deafness being noticed at all. That is, they were natural lip readers, and as long as they could be with children and see them, they could tell what they said. It was noticed that at one time the children would respond perfectly, and the next minute did not respond at all, absolutely making no sign of recognition. At that time the children were unable to see the lips. You must be very careful about this point in testing young children, or you will be deceived once in a while in spite of yourself.

The children are nearly all of them exceedingly bright, and there is absolutely no trouble, by the time they are four or five years old, in distinguishing between idiocy and deafness. They learn difficult matters of education very much easier than persons of normal hearing do. It is important for these children to have their deafness recognized early, as I have said, and to be sent to school at the usual school period if possible. That sounds like a truism, but the majority of the pupils are not sent to the school until they are eight or nine years old. Of course, it is difficult for them to begin with the kindergarten then and learn their A, B, Cs from the bottom up. At fifteen years of age, and older, it is difficult to teach them any method of communicating with the outside world except by the finger method, which of course is very readily learned, but is very awkward, as they cannot communicate except with people who know the method. Where the child begins early, from three to five years old, it is not allowed to use the finger method at all, but is obliged to learn the oral method, reading with the lips. The teacher begins with simple words, and puts the child through the regular school course. So if a bright child begins at four years old, by the time it is fifteen it will be able to enter high school not over one or two years behind. Adults find it almost impossible to do anything at all with the lip method. The younger children, so the teachers tell me, if they possess too much hearing, will not pay much attention to the lip method, endeavoring to use the hearing and not the lips.

I think about a thousand pupils have been graduated from the schools of Massachusetts in the last fifteen or twenty years with the oral method, and the great majority of them have been well able to earn their own living and to pursue useful occu-

pations, in many cases earning good living wages. That was a thing which was absolutely impossible twenty-five years ago.

But the most important point which I desire to make in the brief talk to-night is that if all the children who are deaf had had their deafness recognized and were treated intelligently at an early period, there would be at least from fifty to seventy-five per cent. less deaf mutes in the United States than there are at the present time; instead of being fifty thousand, there certainly would not be over twenty thousand, and probably not that many, because in this city the cerebrospinal epidemic has made a large number of deaf children which we would not find in other cities. This is a very important point, because anybody who has anything to do with children will find among those of his acquaintance a very considerable number who are thought to be peculiar or obstinate or stupid, or something of that sort, but a careful investigation will show a physical cause for it in their ears. So far as my experience with school children goes,—and in the last two years I have examined a large number,—I think it is not too much to state that practically no child is either obstinate or stupid without a physical cause for it. That is, they may not necessarily be deaf, but they are near-sighted, or possess some physical disease; there is some actual lesion to account for it. It is the natural habit of the growing child of from five to eight years old to be bright and happy and to be observant, provided he has not a physical lesion keeping him back. And if that physical lesion is corrected, the child is able to assume a position in after life that he is not able to take otherwise.

I found two or three very unusual cases; for instance, I found two cases of cretinism, and two idiots, and there were one or two other very unusual cases in the same class with the others, entirely without any justification at all.

Another question which comes into the subject of deaf mutism in education is the question of their marriage. All the coeducational schools in this State keep them in the school, or under observation, up to at least eighteen years of age. Of course, it is decidedly an open question whether this is wise or not, because they feel a good deal of sympathy with one another, and naturally form marriages with their associates. The statistics on that point are very interesting indeed. In the census records of the country up to 1850 there is only one case of marriage of deaf mutes, and

it rises until it is something over a thousand cases in the last census report. But if we are to believe the modern statistics rather than the old statistics, we are unable to see that the children of those marriages need to be deaf, or stand any greater chance of being deaf than the children of ordinary marriages. The tendency to adenoid diseases is certainly inherited, but at the same time the operation which has come up in the last twenty years makes the disease perfectly curable, and consequently eliminates all that class of cases. All the cases which come from diseases like scarlet fever, measles, etc., are met by modern treatment, and are perfectly cured. Consequently the proportion of the deaf from the deaf marriages is so small that, while we may think it is or is not a good thing so far as the deaf people themselves go, it apparently has no importance so far as their children are concerned.

That question also concerns the people who are partially deaf. I was approached this year in regard to whether it was wise for two first cousins to marry, in whose family a certain amount of deafness existed. Careful analyses of the adult cases in that family showed that all the cases of deafness were of that class which would now be curable. The adult members of the family were sixty-five or seventy years old, or thereabouts, and at the time their diseases were contracted curative treatment was impossible. A careful analysis of their cases enabled it to be said that the younger members of the family could marry with absolute safety, so far as any deafness in their offspring might result; and it was, of course, a very important point to them.

There is no question, I think, so far as that goes, that there is practically only one disease of the ear which is hereditary, either directly or as a tendency, and that is the class of diseases which involve the auditory nerve itself, and the scapulo-vestibular region, which usually come on in adult life. That is, we can say, as a fairly general rule, that if the person has begun to be deaf early, the deafness is probably remediable, and it is probably not to be inherited in children born in after years.

That is about all that I desire to say, Mr. President, on the subject. I trust that it interests you as dentists. It interested me very much at the time I was making the investigations, particularly to find out how much change there had been in thirty years in etiology, and how different the prognosis of these apparently hopeless cases was.

VENTILATION OF A DENTAL OFFICE.

BY DR. CHARLES C. LINTON, NEW YORK.

ONE of the most important things we have to contend with in our daily practice is the proper ventilation of our operating-rooms. As a rule, most office windows are opened only for a short time in the morning. This may be sufficient for each individual patient who remains in the room for an hour at a time, but it is not enough air for the operator who stays all day, breathing not only the same air over and over again, but more or less of the patients' breath, and this, together with the cramped position of the lungs, owing to the necessary stooping attitude the operator is obliged to frequently assume, makes it a very serious menace to his health, unless counteracted by a great amount of out-door exercise. In order to obtain the best results it is necessary to have a current of fresh air supplied continually.

Frequently there is but one window from which to ventilate, which makes the problem all the more difficult. I think I have solved this to a great extent by a very simple device. The method is not original with me, but is an old idea which I obtained from a magazine and put into practice. I had a carpenter fit a piece of board about three inches wide and the exact width of the window, and had it stained to match the wood-work, with a weatherstrip tacked on top. Then by raising the window and slipping into place, and closing the window on it, I have the ventilation between the two sashes above, through which I am constantly receiving a current of fresh air without a direct draught either over myself or my patient.

Reviews of Dental Literature.

THE USE OF SUPRARENAL IN DENTAL CASES. By E. A. Peters, M.D. (Cantab.), M.R.C.S., L.R.C.P. (Lond.).

Mr. President and Gentlemen,—Thanks to the courtesy of the President, I am privileged to address you to-night, and I do so more with the expectation of eliciting the results of your experience and suggesting the trial of a method which has been successful

in my hands, than to attempt to lay down rules for the treatment of a large class of cases which need daily relief from all sections of the healing profession.

In dentistry there seems to me to be three groups of cases in which suprarenal may be more generally employed: (1) Where it may be used as a hæmostatic; (2) as an adjuvant to local anesthesia; (3) as a local application to allay the pain of inflammation.

For such purposes a liquid extract of the gland is required. The best results are obtained by employing the extract of the fresh gland, but for obvious reasons the use of such a preparation is unpractical; and I have employed for most of my cases an extract, freshly prepared each day of employ, from the tabloids of dried gland sold by Messrs. Burroughs and Wellcome. The tabloids are powdered and shaken with cold water, so as to form ten or twenty per cent. mixtures according to the weight of the originally fresh gland. The containing vessel is then placed in boiling water and heated with occasional shaking for ten minutes. The filtrate is secured, and is reliable for two days or so. If allowed to stand, a dark-brown precipitate forms and carries with it the efficient properties. A most fugitive and shy body is the active constituent, and some of the preparations on the market are singularly deficient in giving the typical physiological reaction of the extract. The vasoconstricting body is said to be an alkaloid.

A one-fourth per cent. solution of suprarenal extracted from the tabloid and diluted with normal saline will give the typical suprarenal reaction when five minims are injected beneath the skin of the forearm. In five to ten minutes a white patch appears over the site of injection and the hair papillæ stand out, forming a goose skin. In marked cases the skin takes on the appearance of rough mosaic. This area has slightly diminished sensibility, and when pricked does not bleed as readily as usual. In this test we have a convenient method for comparing the different strengths of preparations of suprarenal.

If suprarenal extract as a ten or twenty per cent. solution is packed on pledgets of wool into the nose for twenty minutes, the mucous membrane absorbs part of the extract; it then shrinks and becomes white. In some noses it is necessary, on account of this great shrinkage, to repack the nose for another twenty minutes. When the pledgets of wool are removed portions of the

mucous membrane or bone can be removed without a drop of blood falling from the nose. Bleeding sets in at the end of two hours, but the operator is prepared for this and has plugged the nose. Occasionally the bleeding is only modified in amount.

Suprarenal solutions in large amounts have been injected into the subcutaneous tissues of rabbits; a ten per cent. solution prepared as above was used for this purpose. When a little over one per thousand of suprarenal, as compared with weight of rabbit, is employed and daily injected, the rectal temperature falls. At two per thousand the animal loses body weight; when five per thousand is reached the hair over the area falls out and gangrene appears in the area of injection. All this is apparently due to the vasoconstriction, and is on a parallel with the ergot gangrene of our forefathers. If the same ratio of body weight holds good in man, then it would be necessary to inject rather over sixteen ounces of the ten per cent. solution before serious symptoms set in. It is rarely needful in practice to use more than one drachm. So you will see that this extract can be safely used in practice.

The principal action of the extract is to effect a contraction of the involuntary muscles of the arterioles, producing a local ischæmia. According to some there is also a central action. If one suprarenal gland is removed the other hypertrophies (Moore, Vincent, Peters).

1. The hæmostatic action of suprarenal was soon turned to clinical use when Oliver had demonstrated extracts of the gland to have such a powerful vasoconstrictor action, and for this purpose it has been applied in nearly every part of the body. In dental surgery it is useful in stopping hemorrhage from a septic socket, or elsewhere. It has been said that suprarenal extract will check the bleeding of hæmophilia, but of this I have no experience. Possibly some of those present could give their experience on this point.

To obtain the hæmostatic effect ten per cent. suprarenal or a stronger preparation should be applied on a pledget of wool with sustained pressure.

2. Suprarenal is also useful as an adjuvant in producing local anæsthesia. As previously pointed out, the sensory perceptions of the skin over the site of a hypodermic injection of suprarenal are merely dulled—there is no absolute analgesia or anæsthesia. But if cocaine or eucaïne is added, the ordinary anæsthesia pertaining to injections of these drugs is prolonged, and a smaller amount

of these drugs is required when thus combined with suprarenal to cause an equal depth of anæsthesia. Besides this, cocaine so employed is less poisonous, for it is retained in the tissues for a longer time. Cocaine is a vasoconstrictor when given in small doses; in larger quantities it acts as a vasodilator.

If a dilute solution of cocaine is placed on the web of a frog the arterioles are seen to shrink up, but dilate at the end of three to five minutes. If another diluted drop is placed on the web similar phenomena recur. If, however, a crystal of the cocaine salt is directly applied, then instant dilation obtains. Cocaine, according to Mosso (*Archives Ital. de Bolog.*, Turin, 1890, 8, 323), is excreted unchanged through the kidneys. In the ordinary method of application or injection the soluble salt is swept out of the tissues to the central nervous system and there produces its disastrous paralyzant effects. In the case of the frog's web this takes place within two minutes. I have collected a list of published cases of cocaine poisoning. In this schedule it appears that concentrated solutions introduced into an empty stomach in an attempt to inject a quantity into the dense mucous membrane, or accidental swallowing, account for many of the cases. Cocaine, unlike eucaïne, forms no local compound. Reclus (*Le Cocaine en Chirurgie*, Paris, 1895) limits the internal use of cocaine to 1.1 grains, but it is usual in throat work to use pledgets of wool soaked in ten per cent. cocaine, and often there must be five or more grains in the nose. Now, poisoning symptoms are almost unknown in throat work, though a rapid pulse, one of the early symptoms, is frequently recognized. I have worked for years in a throat hospital, but have never seen a case of definite poisoning, so safe is the pledget system.

Suprarenal is of real advantage by contracting the vessels, it localizes the drug, and produces a more prolonged anæsthetic effect, while the drug is more slowly absorbed by the vascular system.

Eucaïne, on the other hand, is a vasodilator, but though a powerful paralyzant it forms a local compound with the local tissues, and so the central nervous system is remote to its sphere of influence (Peters, M.D., Thesis, Camb., 1900). Even the anæsthesia of eucaïne is made deeper and more prolonged by its combination with suprarenal. In ordinary doses suprarenal overcomes the vasodilation due to eucaïne.

There is another advantage which the combined anæsthetic

has: it is to render inflamed tissues anæsthetic, a condition which ordinary cocaine fails to bring about for some unexplained reason. Pledget application of a solution containing five per cent. cocaine and ten per cent. suprarenal may be carried out for half an inch each side of the tooth, followed by the injection of five minims of the twice diluted saline solution in the region of the infra-orbital or mental nerve as required. It is left for absorption to delete the deeper nerves; but it would be possible, if necessary, by a suitable injection into the region of the spine of Spix, or into the maxillary antrum, to cut out the trunks of the deep nerves. I have never seen this done; perhaps some one here has had some experience of this method.

Corning, an American, was the first to point out that an injection of cocaine in the region of a nerve-trunk resulted in the temporary deletion of the functions of the nerve. By applying his method I was able to map out the cutaneous supply of certain nerves, and to show that on the forearm the twigs of one nerve overlapped the other by half an inch (M. D. Thesis, Camb., 1900).

Of course, this method is open to the same drawback as all local methods,—i.e., the patient is conscious of an operation in progress; the minutes of operative procedure are not blotted out for him as in the case of a general anæsthetic. In my own department local anæsthesia is decidedly satisfactory, and a patient who has once undergone a nasal operation under such local conditions will rarely call for any other method if undergoing a subsequent operation.

3. Last of all, we come to the third use of suprarenal extract,—i.e., its application alone or in combination with one-half per cent. of cocaine hydrochloride for the relief of inflammatory pain. I wish to draw your particular attention to such use.

I have described elsewhere (*Lancet*, March 2, 1901) cases where the pain and soreness of laryngeal tuberculosis, recurrent cancer of the breast, of pain which is essentially due to ulceration and chronic inflammation, were relieved by such treatment. In most chronic inflammations there are periods of acute inflammation. Besides these I have employed the extract in dental cases to tide patients over a painful period before they could come into the hands of the dental surgeon. The extract was applied as described above,—i.e., a pledget of wool soaked in ten or twenty per cent. suprarenal extract is tucked up between the cheek and the gum,

and the solution painted on the palatal aspect if the patient cannot allow a similar pledget to cling to the palatal surface for a short time; the pledget should reach half an inch on each side of the tooth. The labial pack should be allowed to remain during sleep, as otherwise the pain may be experienced at the end of two or more hours (*cf.*, the hemorrhage which follows the extract when used in nasal operations after the lapse of two hours).

I will submit two cases to your notice.

1. A lady two days after an operation had been performed complained of great pain which had kept her awake the previous night. I detected a swelling on the palatal side of the alveolus in connection with one of the molar teeth. Ten per cent. extract was applied in the way I have described; she slept that night, and said the pain was rendered bearable. Three days later a small alveolar abscess opened without surgical interference.

2. In the second case pain and tenderness was experienced on the palatal surface corresponding to the palatal root of the first molar, where a slight swelling could be detected. Cocaine, chloroform, iodine, and aconite were all used, and carbolic acid was packed up in between the dental interval, all to no purpose. Applications of the extract, however, tided the patient over for four days, when the pain subsided. About a year later considerable pain was experienced in the same tooth and the surrounding maxilla. On the sixth day of pain Mr. Maggs removed the tooth, finding it septic and an abscess at the apex of the palatal root.

I may add that I have packed the dental intervals with wool soaked in one in ten carbolic acid or five per cent. cocaine dissolved in beechwood creosote. The relief of pain by this method is probably due to vasoconstriction. The arterioles supplying the area contracted and the distention by blood and exuded serum diminished. The increased pain of inflamed dense tissues is said to be due to increased pressure and traction of nerves. Pain by some is said to obtain when a nerve of common sensibility is affected; others are of opinion that there are specific nerves for pain. It is interesting to note that in inflammation of the skin and subcutaneous tissues all the specific functions are disordered, giving abnormal sensations of common sensibility—heat or cold, weight and pain. The action of suprarenal is to render dull all these sensations, and not to completely delete them. At this point it is necessary to ask the question, Does suprarenal influence the

final results of inflammation in an unfavorable way? Personally, I have not seen any necrosis or symptoms of general infection follow its use in the manner specified; the mucous membrane is not damaged. Further, such treatment is in accordance with the employment of depletion and cold applications which are usually accepted for the treatment of acute inflammation. The serious symptoms of inflammations of bone and other dense or imprisoned tissues are caused by the strangulation of vessels by excessive exudation. Possibly, then, suprarenal reduces the ultimate damage. The relief to the patient is considerable; he is able to work and to sleep under its local influence. I do not say that the patient receives as much relief as he obtains from a dose of morphia, which acts on the central nervous system, but suprarenal has the advantage of being innocuous when employed in the manner detailed, and in spite of its instability the use of the extract, prepared as recommended, will give fairly constant results.—*Transactions of the Odontological Society of Great Britain.*

AN IMPROVED METHOD OF MAKING THE MATRIX FOR IRREGULAR-SHAPED PORCELAIN INLAYS.—An improved method of making the matrix for porcelain inlays is noted in C. Ash & Son's Quarterly Circular for December, 1901, page 421, the more marked novel features of which are the use of a preparation of gum lac introduced by Mr. Girdwood for taking the impression, and the use of Spence metal for the mould into which the gold or platinum matrix is swaged by means of Ash's inlay swager. The advantage claimed for this combination is greater accuracy in the impression, a more resistant mould than one made of plaster, and a saving of time, as no time is lost waiting for plaster to set. It is claimed that it only occupies eight minutes to take the impression, make the Spence metal mould, and swage the matrix.

There is no question but that a matrix swaged into a mould will produce a better-fitting inlay than one fitted to the cavity by the skilful use of burnishers, etc., provided that the mould is an exact reproduction of the cavity. A swaged matrix not only fits the mould in which it is made closer than does a burnished one the cavity in which it is formed, but the metal of the matrix is more nearly at rest, and it is therefore less liable to change form during the subsequent operations. The difficulty heretofore has been to produce a perfectly accurate mould, one that would retain

its accuracy during the swaging. Plaster is far too friable to retain the extremely sharp edges, often so important in this work, while fusible metal is not only incompatible with convenient impression materials, but, used as it must be for this purpose, does not usually produce an accurate cast.

For this new process the impression is taken upon a little impression-cup. Impression-cups made for this purpose are little metal plates of a size and shape to reach and conform to the various positions in which cavities suitable for porcelain inlays are usually found. They are perforated with a few small holes, the better to retain firmly the impression material. They usually have been made with a long handle, but this has proved a disadvantage, interfering, as it does by its leverage, with that steadiness essential to securing an accurate impression. Mr. E. B. Dowsett has devised a set of impression-cups for this purpose in which the handle is dispensed with. They are made in pairs connected together by a short pin and split tube so that when united they are firmly attached to each other and yet may be readily separated for convenience of after work. The advantage of thus connecting them is mainly in that the second cup forms a very convenient rest for the ball of the finger or thumb to press upon and hold the cup firmly and steadily in place, and thereby secure a more reliable impression.

After the impression has been taken the cup is detached from its fellow and by means of investment material is implanted, face up, in a special flask, and a cast made from it of Spence metal. Spence metal is hard and rigid, but very brittle. With proper care it reproduces very accurately the mould, more so than fusible metal, and retains its accuracy under the swaging force required remarkably well. It requires but little heat for fusion, but is very sensitive to overheating. To avoid this Mr. Carl Christensen has devised a ladle with a cup-shaped downward projection which serves to restrain the heat from reaching the sides of the ladle. When melted, the Spence metal has the appearance of a spongy mass; the heat is withdrawn when this condition is reached, and the mass stirred with a stick until it settles down and becomes clear and free from bubbles. It then stiffens somewhat and finally liquefies. This liquid condition must be looked for, and when it appears the metal must be quickly poured. The cast thus obtained is used in Ash's inlay swager precisely as would be one made of plaster.

Objection has been made to the gum lac impression compound on account of the heat required to make it sufficiently plastic.

It is contended, however, that except in very sensitive cavities this causes no more discomfort than would the use of gutta-percha as ordinarily used for fillings.

Another novelty in matrix-making is noted in the *Dental Record* (London), January, 1902, page 40, suggested by Dr. Bruhn. This is a matrix die-plate, similar to those used to form the cusps of shell crowns, with a number of depressions upon its upper surface into which the metal of the matrix is pressed and partly shaped before being adjusted to the cavity. It is said to be endorsed by Dr. Jenkins, of Dresden, as having practical value.

W. H. T.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the office of Dr. E. A. Bogue, No. 63 West Forty-eighth Street, New York, on Wednesday evening, February 12, 1902, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

The regular order of business was reversed and Dr. Park Lewis's paper, the formal paper of the evening, was presented before the communications on theory and practice.

(For Dr. Lewis's paper, see page 393.)

DISCUSSION.

Dr. Wendell C. Phillips.—I am sure it has been a great pleasure, first, to be a guest of this society, and secondly, to listen to Dr. Lewis's paper. It will be impossible to discuss all the points that have been touched upon, and it has seemed to me that I could spend the time better in discussing those points which especially interest your profession. I would like to preface my remarks by stating something that perhaps many of you would hardly believe, that, on an average, one child in every eight or ten has adenoid

vegetations in the vault of the pharynx or hypertrophied tonsils. The proportion is a very large one, and when we come to consider this proportion with the very few who present dental deformities, it seems to me that it rather opposes the theory outlined by Dr. Lewis. About two years ago I read a paper before the Odontological Society, the subject of which was a discussion of "The Sequelæ of Adenoids in the Vault of the Pharynx." At that time I made a considerable study of deformities. A dentist came to my clinic and made casts of the cases as they came in. Out of about twelve cases there was only one that presented a dental deformity. Deflection of the septum naturally accompanies a high arched vault, but I think it is more frequently the result of external violence. The narrow jaw, high arch, narrow face, and the peculiar facial expression are only seen when these cases are very marked and extreme in character and when the adenoids appear very early in life. I do not think you will have very much deformity when the adenoids begin to develop at seven or nine years of age, as is often the case. That children are born with adenoids I believe to be of very rare occurrence. I believe that heredity enters into the case more than the congenital condition. I have seen the same general characteristics of hypertrophy in mother and child, but I do not think it necessarily follows that the child was born with the enlarged tonsils.

In regard to the general effect upon the child, on account of difficult breathing and lack of oxygenation of the blood we find the pigeon chest, and we may get rhachitis and lack of development along various lines. These results are rather more those due to improper oxygenation than anything else. I do not mean to be understood as saying that I do not believe adenoids are the cause of high arched palates, but I believe it to be the exception rather than the rule. I think Dr. Lewis's statement in regard to the ear is absolutely correct. Almost without exception, where we find acute suppuration of the middle ear in a child, that child has adenoids. I have rarely known it to fail. For this reason, if for no other, operation should be performed. The reason for this persistent ear complication is easily explainable. The adenoids fill up the space between the openings of the Eustachian tubes. Then when there is a cold the infection by various means gets into the Eustachian tube and along that into the middle ear. There is a common expression among medical men that running ears in

children are due to dentition. I think it is pretty well understood now that dentition has no more to do with running ears than stone in the bladder, and that you never have discharging ears in children unless you introduce infection by way of the Eustachian tube.

Regarding the disappearance of this lymphoid tissue at puberty, no doubt it does disappear to a certain extent at that time, but that is no argument against the importance of their removal because before that time the damage may have been done. If you retard the physical development of a child you will retard his mental development, and this condition certainly does very much retard the physical development.

As to the eye, it might seem when you first consider it that it is a rather far cry. However, I am not going to discuss that, as Dr. Davis is much better able to do so than I. The only way that it would seem to me reasonable that the eye could be affected would be by the effect on the general nutrition.

In order that I may impress upon you the degree this condition may reach in retarding the development of a child, I have in mind a patient who suffered with adenoids in a severe form. He was never able to breathe through the nose. At the age of sixteen years he was a little "runt," and had never seen a healthy day in his life. A thorough removal of the growths resulted in almost a miracle. In one year he gained fifty pounds in weight. From a boy he shot into a man with great rapidity. In every instance increases in weight have followed this operation.

Dr. A. E. Davis.—Dr. Lewis has said that the adenoids in the throat affect the eye. I agree with him to the extent that they do so in a general way, but not directly as they do in the ear. As you know, in the eye itself we find no lymphatics. We do, however, find lymphatic spaces. These lymph spaces inside of the eye connect through the sheath of the optic nerve with the lymph spaces in the brain. Nevertheless, these adenoid growths do to a certain extent affect the eye. Regarding the case Dr. Lewis mentioned of a conjunctivitis not being relieved until the adenoids were removed from the pharynx, I have seen such cases myself. I have seen cases where a conjunctival inflammation resisted all treatment until adenoids in the pharynx were removed.

As far as the development of the eye is concerned, and these conditions causing hypermetropia and squint, I think this is rather due to the fact that most of the eyes of children are hypermetropic

until they are ten years of age. So the fact that we find hypermetropia in these cases of adenoid growths is no indication that there is any relation between the two. Myopic children are very rare, and for that reason we would observe very few myopic children with adenoid growths. There are cases reported where squint has disappeared after this operation, but no doubt it is due to the increased nutrition. Again we should not be too sure of the direct actual relation between the two, because in a great many cases squinting eyes are outgrown. With proper correction of the refractive error about thirty per cent. of squinting eyes can be cured without operation. I wish every oculist could have a reprint of this paper, especially those who are so prone to cut muscles. It is my opinion, and in this I agree most thoroughly with Dr. Lewis and the rest of you, that in cases of muscle insufficiency nine-tenths of the children have adenoid growths which tend to reduce nutrition. We have oculists, I am sorry to say, who try to balance every muscle of the eye, giving no thought to the general nutrition. I think ninety-nine per cent. of these cases can be cured with proper attention to the general nutrition. In regard to the experiment of sewing up the rabbit's nose and causing hypermetropia, it is a well-known fact that animals, without exception, are born hypermetropic and remain so. Even in mankind we do not become myopic until we are civilized. All uncivilized races are hypermetropic. It is the rarest thing in the world to find the ideal, the emmetropic eye. I believe then that the direct effect on the eye of these lymphatic enlargements in the pharynx is not marked, but indirectly by affecting the general health and nutrition these growths may and often do have a bad effect on the eyes.

Dr. Haskin.—I was very much interested in what Dr. Phillips said regarding adenoids in very young children. I have examined several hundred cases in hospitals, and see these growths constantly in children from one to two years of age, and where operation is attended with great relief. Dr. Bogue asked me to speak more especially with reference to adenoids in connection with cleft palate. There are rarely ever cases of cleft palate without adenoids, but as cleft palate is a failure of union in utero this condition can hardly be ascribed to the adenoids. I think in many children where adenoids occur, they are often a symptom. A great many times it is due to improper feeding of the child by the parents. When the child is small, as soon as it begins crying

they give it the bottle, and by the time it is eight or ten months of age they give it everything under the sun. That undoubtedly will produce some disturbances in the digestive apparatus which will naturally be followed by a congestion of the lymphatics of the mucous membrane.

Dentition I do not believe has a great deal to do with the production of the middle ear diseases, but at this time, especially in the children of the poor, the mouth is in a very much more inflamed condition and attacks of stomatitis are more frequent, and any inflammation of the mucous membrane of the mouth may extend to the Eustachian tube. I thank Dr. Lewis for his most interesting paper, and you, gentlemen, for having had this opportunity of listening to it.

Dr. Stuart Close.—I would like to ask whether, in the experience of the lecturer, there is not a recurrence of the adenoids after operation, and in about what percentage of cases they recur?

Dr. C. A. Brackett.—Just a word to express my appreciation for what I have gained this evening. I have known enough of this subject for some years to be greatly interested in it. I made the journey from Newport solely to be present here, and I feel fully repaid for the effort.

Dr. Davenport.—While it is no doubt true, as Dr. Phillips has said, that the disturbance of the bony formation and the peculiarity of mouth-breathing are present only in a small proportion of cases where adenoids are to be found, I think the proportion is large enough for dentists to take upon themselves the responsibility, which I consider great, of always being on the lookout for this condition. It has come to my attention that the dentist is often the first to recognize the presence of adenoids in sufficient amount to interfere with the nutrition of the child. It seems to me that this matter is well brought up at this time, to emphasize our duty to our patients, to increase our watchfulness in diagnosing these cases. While it may not be possible for us at a glance to say "this child has adenoids," the presence of the rat-like face, the peculiar expression accompanying mouth-breathing or the pinched and strained appearance of the face usually present,—one or more of these symptoms being recognized should cause us to advise the taking of the child to a specialist for examination.

Dr. Lewis.—I will summarize very briefly what I have to say. If you will recall my paper I think you will remember I distinctly

stated that the crowded teeth and high palate were by no means always present. You will find very many cases in which there are perfectly normal jaws.

Of course, if the general nutrition of the body suffered, the eye would suffer with the rest, but in the experiments to which I referred the closing up of one nostril was accompanied by hypermetropia in the eye on that side *only*, and not in both eyes, as would occur from a disturbance in general nutrition. Dr. Davis mentioned the absence of lymphatics in the eye except in the conjunctiva. Follicular conjunctivitis is the only disease of the eyes which I have seen as a result of adenoids. I will say, in answer to Dr. Close's question as to how many cases recur after removal, that they do recur, but not frequently. In a large number of cases an operation ends the matter; in some, as after amputation of the tonsils, the remaining structures again hypertrophy. I am very much obliged, gentlemen, for the courtesy I have received.

Dr. C. O. Kimball.—I move you, Mr. President, that the most hearty thanks of the Institute be tendered Dr. Lewis and also Drs. Phillips, Davis, and Haskin for so kindly meeting with us to-night and contributing to our instruction and pleasure.

Motion seconded and unanimously carried.

COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. Davenport presented a letter from Dr. E. H. Raymond.

Dr. E. H. Raymond.—There are two things my brethren may find helpful from which "my people" are deriving benefit. One is a compound of milk of magnesia and precipitated chalk, for erosions, made for me by the Charles H. Phillips Chemical Company, 128 Pearl Street. It is made into a paste, and if applied with the finger around the necks of the teeth before retiring, it will be found to remain longer than any preparation yet tried.

A piece of muslin, or thin cloth cut into narrow strips, on one side of which is spread the compound, if placed under the upper lip, will be found effectual in very "wet mouths." To be applied at night.

The other is for obtunding sensitive dentine by the use of nitrate of silver. Add equal parts of powdered nitrate of silver and eucaïne (or cocaine), and make into a paste with carbolic acid. Dry the cavity to be treated, saturate it with carbolic acid, and then place the above compound in it and seal it up with soft

gutta-percha. I use an asbestos mat to carry the compound. There will be no pain from the application, as in the case of nitrate of silver alone, and you can excavate and fill without pain at a future sitting.

For supersensitive dentine it is the best thing I have ever used, as when properly manipulated not one particle of pain need be given from beginning to end of an operation.

I even use it in front teeth where cavities are accessible, cutting out the stain. A second application may be necessary in many cases after superficial decay is removed.

You all know the good effect of silver nitrate on dentine.

Dr. Bogue presented a device in the shape of a rubber dam holder, patented by Dr. Knowles, of San Francisco, in order that it should not be seized by any manufacturing concern, but should be at the service of dentists everywhere.

Also an efficient nozzle affixed to the tubes of ethyl chloride, to be used in obtunding sensitive dentine by means of which a series of jets can be thrown into the cavity by pressing the thumb on a lever.

Also a model of a rather peculiar case presenting but three lower incisors, with the remains of temporary teeth separating the bicuspid on the right.

Dr. E. A. Bogue.—I would like to know from Dr. Lewis if he considers the condition which we have heard so much about this evening influential in producing the narrowing of the jaws.

Dr. Lewis.—It has seemed to me quite possible that it might contribute, but I do not believe by any means that this alone is the reason for the contour of the face.

Dr. H. W. Gillett.—Dr. Hamilton, of Boston, in writing me some weeks ago about another matter, mentioned a tooth-brush which he had devised. Dr. Hamilton's idea is that in many cases the gums are injured by brushing, and in order to obviate this he has devised this brush, which consists of alternate rows of bristles and badger hair, the hair being longer than the bristles, which serves to keep the hair from matting down. Dr. Hamilton feels that many cases of recession are due to too vigorous brushing, and he has seen much benefit by prescribing this brush.

Dr. F. Milton Smith.—I have been polishing teeth a great deal during the past few months, and while I have not made new teeth to grow where there were no teeth, I am quite sure I have im-

proved the condition of the old ones, and in cases of pyorrhœa this polishing has done wonders in some instances. What I want to call especial attention to is this little simple port-polisher, which is made by drilling a hole in the end of an instrument having a heavy shank. The hole is made sufficiently large so that the small-sized orange-wood sticks furnished by the depots will fit tightly. I have a number of these instruments, each differing from the others in the angle at which the hole is drilled, obviating the necessity of changing the points so frequently as when a single instrument having a changeable angle is used. Having half a dozen of these ready at hand when I desire to polish the teeth I find economizes my time.

Dr. Gillett.—The old Cogswell file carriers make very handy polishers.

Dr. Brackett.—I can endorse the efficiency of the Cogswell carrier. The stick can be turned at any angle. It is very simple and convenient.

Dr. Kimball.—Sticks for these polishers, maple and cedar, can be obtained here in New York from piano-action makers, Wessel, Nickel & Gross, 457 West Forty-fifth Street. They are perfectly finished, $\frac{7}{8}$ of an inch in diameter: the maple sticks can be used for wedging and polishing and the cedar for polishing.

While I am on the floor I want to emphasize the method of extirpating a pulp by direct anæsthesia, either by eucaïne or cocaine. The subject has been referred to before, having been advocated by Dr. Briggs, of Boston, and others. I have used it a good many times. I recently had an illustration of its efficacy. For the benefit of those who do not use it at all, I would like to explain its *modus operandi*. In one case, for the devitalization of a superior wisdom-tooth, I applied arsenic, with the result that in about three hours the patient returned, the pain being almost unbearable. The tooth was one that could not readily be reached by a hypodermic syringe, but by closing the cavity with gutta-percha with the exception of a small opening I fitted to this opening a conical plug of soft rubber, through which I passed the needle of the hypodermic. By holding this plug very firmly in place with an instrument like a two-tined fork, I was able to close the opening so as to get a minim or so of a four per cent. solution of eucaïne injected under strong pressure. There was immediate cessation of pain, although the tooth had been aching violently.

I was then able to remove the pulp without pain. The same thing occurred this week in the case of an upper first molar. In these cases it is necessary to be pretty thorough in the operation, removing the pulp clear to the apical foramen, else there may be pain afterwards. In these cases I have mentioned relief from pain was immediate and final.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

HARVARD ODONTOLOGICAL SOCIETY.

THE regular monthly meeting of the Harvard Odontological Society was held November 21, 1901, at Young's Hotel, Dr. Waldo E. Boardman presiding in the absence of the President.

An address was given by Dr. E. A. Crockett, of Boston, subject, "Deaf Mutes."

(For Dr. Crockett's address, see page 405.)

DISCUSSION.

The President.—This interesting subject is now open for consideration. I will ask Dr. Werner if he will open the discussion.

Dr. Werner.—I do not see how I can open a discussion on a subject upon which I feel so totally ignorant, and in regard to which, so to speak, I have heard my first talk. I very frequently see these deaf mutes that Dr. Crockett has examined in the Horace Mann School, and I pity them; most of us do. And I pity them more now, when I think how many of them might be in much better condition than they are.

I was in hopes that the doctor, in some way or another, would tell us of the possible relation between the teeth and the ear, and I hope he will yet tell us that. We are very much interested to know how any dental trouble might be, by neglect or maltreatment, conducive to deafness. In that direction I am sure we are all very much interested.

Another thing that was very suggestive to us all, no doubt, was the question of adenoid growths. I think the time is coming when we as dentists will have much more to treat in that direction. In my own family I have had both my children treated, and it cer-

tainly relieved what seemed like a good deal of earache and the tendency to mouth-breathing, and the operation seemed justifiable.

The suggestion is in the direction of how many of these deaf mutes in our public schools, the Horace Mann School, and the Northampton Institute (something like fifty per cent.) are due to diseases that could be cured, principally adenoid growths; and when we know the condition of our climate, and that of Norway, Sweden, and the northern parts of Germany, where we find deaf mutes are prevalent, we can see that we as dentists will eventually have that question come more or less under our special treatment. Many of our little patients come to our hands at an age when it is decidedly to the patient's advantage, and decidedly our duty, that we find out whether they have adenoid growths or not. I think likely there is no other body of specialists that would be half so intelligent on the subject as the dentists, or that would have half so good a chance. The child has measles or bowel troubles, and the general practitioner does not examine its mouth or its nose; but when that little patient comes to our hands, the mouth is examined, and we might take a step farther and examine the nasal posterior region, and decide the question of whether adenoids are present or not. In my own practice it has been many times suggestive, at least, of having the patient treated by special or competent hands; and perhaps if I had not made a suggestion it would have been allowed to go on, and there would have been more serious trouble.

Dr. Naylor.—There is just one question, in regard to teaching the scholar the method of lip understanding,—learning what a person is saying by watching the lip, and at the same time the child itself learning to talk. I would like to know whether, as a general rule, the sound of the patient's voice is similar to the sound of the ordinary person's voice when they are learning to talk?

Dr. Crockett.—If the patient has hearing enough to get a perception of sound in the way I spoke of, by putting the hands on the piano and getting an idea of pitch, then their voice will be natural after from three to five years of education.

Dr. Naylor.—Why I ask that question is that I have a patient that was born without being able to hear or speak, and she has learned the method of lip understanding so that she can readily understand anything; but in talking there is a very peculiar sound

to the voice: it is not the sound of an ordinary person speaking. It seems to be somewhere way back in the head, and it takes a certain amount of concentration on the part of the listener to understand what she says. I wondered whether that was the ordinary case with these patients or not.

Dr. Crockett.—That is the general case, up to about five years of education; and it is the universal rule where they possess no hearing whatever, so that they have no idea of pitch. I took a number of the children from there who talked in that way, and who have been educated for five or six years, and removed the adenoids, and it improved the resonance of the voice in a number of cases. Of course, if they have no conception of sound or pitch, they cannot tell whether their voice is loud or soft, or whether it is in their heads or thrown out.

Dr. Cooke.—I would like to ask the doctor at what age an examination would amount to anything,—i.e., to give good treatment to prevent these patients, this fifty per cent., from being deaf on account of the adenoid growths? That is, when the children go to school, at four years of age, or when they enter the primary school or the kindergarten, if they were examined then, would that be too late?

Dr. Crockett.—No, I think that would strike nearly every case.

Dr. Cooke.—Then if we had a system of examinations in our schools in regard to the physical condition, it would cure a very large amount of troubles. Then in connection with the eye troubles, with blindness, does not a large share of that come, as with deafness, from a lack of treatment?

We are in the same fix in regard to dentistry. The patients do not come to us until they have had trouble. And if we are going to make a success in the future, our victories must be won before the child is ten or twelve years of age. But we are at a disadvantage, alike with these men who are treating these other troubles. If the children could be examined who go to school, then their parents would understand, from a reliable source, just what condition the child is in physically. I hope we shall see the time when every single child that enters our public schools shall have that kind of an examination, so that the systems of both men and women shall have at least good bodies to begin on, and bodies that have been passed on by competent authority so that these things can be cured.

Dr. Werner.—May I ask to what extent does a public physician, assigned to a school, as I understand is the case in Boston, render any real service to the individual child, except in the case of epidemics?

Dr. Crockett.—I do not want to criticise the system, but there is a physician to every two or three schools in Boston, and so far as I have seen the examinations made, the physician will simply go in and spend fifteen minutes in a room of fifty pupils, and look them over, and then he goes out and goes to the next room.

Dr. Bigelow.—Is it not true, Dr. Crockett, that the parents interfere with such medical examination somewhat, and make it difficult for the inspectors to do their work?

Dr. Crockett.—I do not know. They made it rather awkward for me in another way. A great many of the children had been seen by other physicians, and I found the parents were immensely interested in the process. They would come around personally to the school: none of them objected to the examination, and no one objected to any operation I thought wise. I think there is a great difficulty that you may interfere with some other man's treatment; you must be very careful about that, that you do not take the case away from any man in private practice.

Dr. Bigelow.—Is this medical inspection done as a gratuitous service?

Dr. Crockett.—I understand they pay a small salary.

Dr. Giblin.—I think it is very important that we as dentists, who come in contact with so many children in our practice, should be able to direct them to specialists in the care of the ear and throat; and it occurred to me in connection with a little girl I have in charge now, who is partially deaf. She has reached the age of twelve or thirteen years. She had a lesion or an abscess form in one ear, and she is quite noticeably deaf. I suppose it has reached the limit when it is past curative treatment, judging from what Dr. Crockett said; but personally I should like to be able to direct the parents, if it is not too late, to attempt some treatment for the case. She was operated on for adenoids, and subsequently there was an abscess formed in the right ear. She is attending the public schools, and has reached the graduating class in the grammar school. She is quite bright. Is that too late to undertake treatment?

Dr. Crockett.—That is a very difficult question to answer. I

think the chances are in deafness as in everything else, as if she had a broken arm eight years ago, and it was now attempted to set it: the chances are it is difficult to do anything with it. It is possible it might be improved. I doubt very much if after seven or eight years her hearing could be made normal. I do not believe she would have one chance in fifty of obtaining a perfect ear or anything like it. When it comes to adult life you cannot do much in the way of treatment.

Dr. Giblin.—Does a lesion in one ear always affect both?

Dr. Crockett.—No, not at all.

Dr. Giblin.—This child is deaf in both ears.

Dr. Grant.—I would like to ask Dr. Crockett a few questions, and one is regarding what he said about Sweden and Norway. I am in the condition Dr. Werner is in: I never heard anything about it before. I should like to know whether the deafness is a result of climatic causes entirely?

Dr. Crockett.—It is very much more common in northern countries, and especially in countries like Denmark. The percentage is large there, because they have a very changeable climate and are entirely surrounded by water, so they get moisture as well as cold. They have a Boston climate in every part of Denmark, and they have a great deal of trouble in that country.

Dr. Grant.—Another thought: when you were speaking of the increase in the number of deaf mutes from intermarriage, I wondered how much that could be due to the immigration of people from those countries. In the last fifteen years there has been a very largely increased immigration from those countries. I wonder whether some of it might not be due to that.

Dr. Crockett.—I suppose very likely. I could tell with these children because I have the birthplaces of all of them.

Dr. Cooke.—I should like to ask one more question. I understand that there is on Martha's Vineyard Island quite a community of these deaf mutes who have married and intermarried.

Dr. Crockett.—I had never heard of that.

Dr. Cooke.—There are quite a number of them there. I wonder if the statistics refer to these.

Dr. Crockett.—I would not want to be construed as criticising the present method of school examination: I think the present method is all right, except that it does not go anywhere near far enough. The examiner is not paid enough for the examinations

to make it any object to him. I do not know exactly what it is, but I think two hundred dollars a year, or thereabouts, for examining two or three schools at a time, and making the examinations once or twice a week. It does not make it an incentive to a man. He is not expected to go much beyond contagious diseases. I think, as the doctor stated, he should examine the teeth and the eyes and the ears, which are as important as to find out whether they have got measles, and a good deal more so.

Dr. Grant.—I would like to ask one question, perhaps not especially relative to deaf people; but I have heard it stated a great many times that the ear of the female was able to hear a greater number of vibrations than that of the male.

Dr. Crockett.—No, I do not think that is true. I think it might possibly be true in this way, that the ear could be trained to a very considerable extent, and possibly more women are versed in music. naturally, I think, when they are born, for instance, there is no difference.

Dr. Grant.—I have heard it a great deal. It is really taught in some music schools as a fact, and I never could quite reconcile it to my ideas of the fitness of things. They claim, for instance, that a woman or a girl will hear a higher pitch note; that is, after it has gone beyond a man's hearing, a woman can still hear it.

Dr. Crockett.—I do not believe you could substantiate that scientifically. If a man is musically educated his auditory nerves are very much keener.

Dr. Gilpin.—I should like to have Dr. Crockett answer Dr. Werner's question,—if he has ever had any experience of deafness from dental irritation? or is there such a possibility?

Dr. Crockett.—I do not think there is. I think you get a good deal of neuralgia in the ear, but I do not believe you could get an actual deafness from purely dental irritation. Of course you might from an abscess, or something of that kind; but otherwise not.

Dr. Werner.—Could we not through an impacted tooth, or a badly situated or abnormally situated third molar? Of course, you would in all those cases, would you not?

Dr. Crockett.—I do not think I ever saw one that I thought came directly that way. I know some of the text-books say it does.

Dr. Boardman.—The chair will state in connection with this

that the Massachusetts Dental Society, at its last meeting, took into consideration the question of appointing a committee to examine the school children of Boston and Massachusetts, and the subject is now before them, and at the next meeting they expect to report as to what they have done and the methods of procedure in that line. They expect to proceed through the Board of Health, I understand, and examine all the children's mouths that they can.

Dr. Werner.—Just one suggestion. If it comes to that universal examination of our children in the public schools, I have two children who are both going, or have been, through public schools, and I hope they will have something like thorough asepticism practised. I should most decidedly object to having my child examined with the same mouth mirror used for some one else, and exposed to contagious lesions possibly. It opens a very wide field, and if our Dental Society suggests anything in that direction they must be careful in these particulars. We are just waking up thoroughly in our profession and in our schools, etc., to the care we should give ourselves, as well as preventing contagious diseases. I think that is the universal feeling among the children,—a feeling that great harm may be done in that direction. Intelligent people would not object to it if they could be convinced that it is thoroughly up to date.

Dr. Moffatt.—The secretary will remind the Society that the National Dental Association have invited us to co-operate with them on the subject of oral hygiene in our public schools. A letter was read last May, and nothing has yet been done about it. There is an opportunity for those who are interested to start the good work.

Dr. Baker.—I will say that the National Association took up this subject, there was a committee appointed for that purpose, and they have now invited every dental society in the United States to co-operate and assist them in the work.

Dr. Boardman.—Is there any further discussion? If not, I will ask Dr. Crockett if he has anything to say.

Dr. Crockett.—I do not think I have anything further to say, except that in my personal experience in examining the children, as I have said before, the parents made no objection whatever to it. But I found that it took a great deal of time. Of course, I took six or seven instruments of each kind. I could not possibly examine more than twenty children in two hours, and I had two

of the teachers to assist me to take notes and get the children in line. It is an exceedingly difficult task to do it thoroughly.

On motion, adjourned.

H. W. HALEY,

Editor Harvard Odontological Society.

Editorial.

THE SUMMER CONVENTIONS.

THE annual gatherings that will convene in the coming two months in this country and in Europe are not only very important, but they indicate, in some respects, a decided advance over anything that has preceded them in the line of organized effort. The indications are that all of them will be occupied with important matters that intimately concern the welfare and progress of dentistry.

The Section on Stomatology of the American Medical Association, which meets June 10 to 13, at Saratoga Springs, promises to be an interesting meeting, if we may judge by the programme published. This, the first of the National organizations, is to be followed, July 24, 25, and 28, by, respectively, the National Association of Dental Faculties, the National Association of Dental Examiners, and the National Dental Association. These three meet at Niagara Falls, a place that has become historic in dentistry, for it was there the American Dental Association began its labors, and, naturally, the old members of that body still have connected with it many sacred memories.

The Association of Dental Faculties will have before it several questions, the most important of which will probably be that of arranging for the four years' course, beginning 1903. While this, in a measure, must of necessity be left to each individual school, a general consensus of opinion will be required to enable the various colleges to come into an harmonious curriculum. The relations of the dental colleges of this country with those of other lands is a difficult problem, and until finally settled, if this desirable condition should ever be reached, there will be more or less friction,

and this, while not always pleasant, is part of an experience that must be lived through in order to reach something better and more enduring.

The National Association of Dental Examiners is a body that seems to be growing in influence and power, as it is expected this year that States heretofore holding aloof will be represented in its deliberations.

There is a hope that the National Dental Association may this year demonstrate more completely than heretofore that it is worthy to be called a scientific body. The sections will be expected to present matter worthy the consideration of such an organization. If, however, the usual routine methods are adopted and the members be served with a rehash of matters long since settled, there will be little gained over previous conventions. The indications are, however, that there will be a decided advance and more original work presented. It is unfortunate that this meeting and that of the American Dental Society of Europe, to be held August 12 to 15, together with the International Dental Federation, meeting at the same time at Stockholm, come so near together. This was unavoidable, as climatic conditions would make a later meeting at Stockholm unsatisfactory. The number from the United States who expect to meet with these two bodies in that city will, it is feared, have a tendency to lessen the interest of the meetings in this country. This has always been the case where there has been a similar conflict of time. The day of adjournment of the National Dental Association, probably Friday, August 1, leaves but a narrow margin of time to reach Stockholm on the 12th.

The meeting of the International Dental Federation is probably the most important of the two gatherings in Sweden, important in the sense of bringing men of many nationalities together. It is questionable whether it will accomplish more than this, for those conversant with conditions existing in various countries have no reason to be sanguine that any real educational harmony will be the outcome of this meeting. While this is true, the final results must mark an advance, if nothing more be accomplished than a better understanding, and this leads naturally to a wider cosmopolitan thought and a broader conception of duty. The meeting, therefore, should be welcomed as a harbinger of a period, yet it may be in the future, but sure to come, when there will be neither English, German, French, Italian, Swedish, or Austrian dentistry,

but one profession for the entire civilized world, governed by the same ideas and practical excellencies.

The extension of these meetings over the world in the form of international organizations, both in medicine and in dentistry, will of necessity lead to a better regulation of time of meetings. This journal has for years urged a change of time from the hot months to a period in the spring more conducive to comfort and energy, but as yet there has been no answering voice in favor of a change. If, however, we are to be confronted every year or two with a conflict of time between the home and foreign meetings, to the great injury of the former, there must come a conviction that the present arrangement is neither comfortable nor convenient.

Setting these questions aside, the writer can have only the deepest interest in all such efforts, and will continue to hope that the delegates from America to the two meetings in Stockholm will be able to fully demonstrate that the dentistry of this country is ready and willing to co-operate with that of all other countries upon a basis that will leave each one to work out the problems of dentistry as they arise, in their own way and upon an educational basis best adapted to the needs of the people and the country in which it is practised.

BIOGRAPHICAL SKETCHES.

OUR readers have doubtless been interested in the sketches of prominent men in dentistry presented from time to time by Dr. Charles McManus, of Hartford, and the half-tone reproductions that have accompanied these as frontispiece illustrations. The value of Dr. McManus's work can hardly be over-estimated in that he is giving to the present generation of dentists a vivid conception of the life and appearance of the men who made dentistry in this country and, it is hoped, before he concludes, of the world

In the present issue is presented a very striking picture of Edward Hudson. We are indebted for this to Dr. E. T. Darby, who, after much difficulty and a good deal of diplomacy, succeeded in securing the consent of relatives to have a photograph taken of the portrait by Sully.

The character of the man as portrayed by Dr. McManus is strikingly illustrated in this picture, a marked individuality of character accompanied by all the characteristics of refinement peculiar to the cultured men of the period.

Dr. Hudson is almost an unknown figure in dental history, for the reason that he was not a book-maker, and dental journals were not in existence during his lifetime of work. His reputation has been, therefore, almost purely local, and dependent largely on tradition, but this has been of great value as it demonstrates a well-attested fact, that at least one remarkably skilled operator existed in the early years of the nineteenth century and that all the good workers in gold have not been concentrated in the last decade of the same century or the first of the twentieth.

Those who were contemporary with Dr. Elisha Townsend, an operator without a peer in his day, know the value he set upon Dr. Hudson's work. While he may not have known Hudson personally, he had ample opportunities of examining his work, for these splendid efforts were quite familiar to dentists of Philadelphia fifty years after insertion.

From an old Philadelphia Directory of 1814, in possession of the writer, Dr. Hudson's address is given as 133 Walnut Street (old style), at that time the best residential quarter in that city, but now given up exclusively to business. In this year there were only thirteen dentists in that city, but among that small number were several names, besides that of Hudson, that have come down to us with honor, such as Gardette, Gilliams, Koecker, and Van Pelt. When this period is compared with the present time the progress in dentistry becomes more apparent. The present number of dentists in Philadelphia will not fall far short of seven hundred. Polk's Dental Directory for 1900 gives it six hundred and fifty-four. Add to this number four dental colleges, with thirteen hundred students, and the advance made in a hundred years becomes almost startling. If the next century, our present twentieth, enlarges its work in the same proportion, it is possible that it will mark a revolution in conditions and methods.

The work of Dr. McManus in the *INTERNATIONAL*, and of Dr. Thorpe in the *Dental Review*, gives encouraging evidence that a few are interested in dental history and are determined to rescue it from unmerited oblivion. It should, therefore, be possible in the near future to have a History of Dentistry worthy the name.

The men of activity in the past century are rapidly disappearing from the world's life. While personal knowledge is not absolutely essential as an aid to the writers of such a history, it gives a vivid charm to otherwise dry compilations that nothing else can furnish. This history has been talked about since the Columbian meeting, when a committee failed to make a proper report, and it is still in the hands of a more competent committee of the National Dental Association, of which Dr. McManus is chairman. It will necessarily be a work of years, but if the labor be divided up into several periods, with interested collaborators at the head of each, the result would be more satisfactory. This history is so badly needed that the writer would be gratified if he could anticipate the publication of the work in the near future.

DR. BENJAMIN LORD.

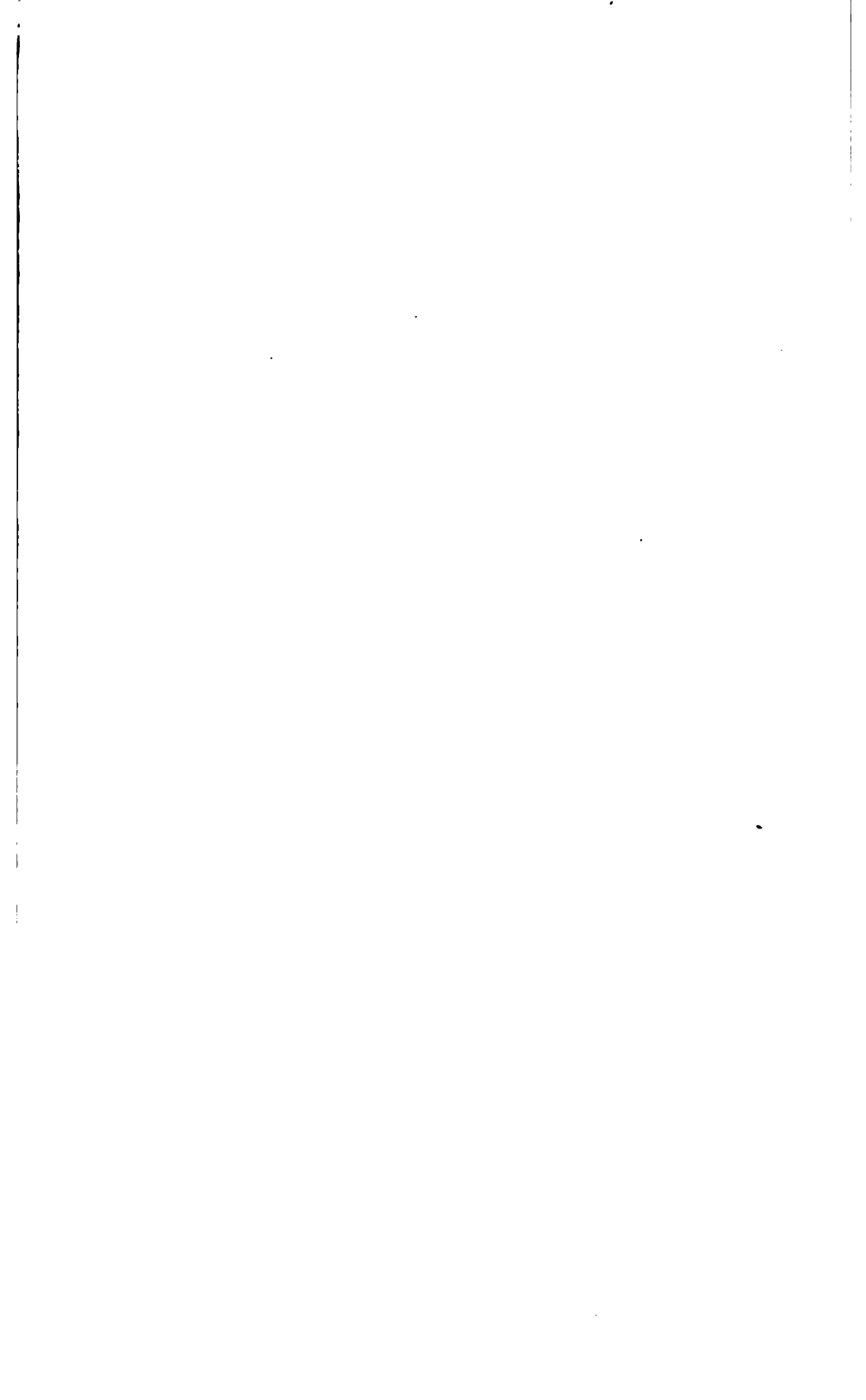
DR. BENJAMIN LORD died at his home, New York City, May 3, 1902.

Among the many who have passed from the activities of life few, it is surmised, will be more gratefully remembered than Dr. Benjamin Lord. His life had not been passed in the rush and turmoil common to ambitious men, but rather in the silent pathways where he sought to reach the truest place, that of a humble seeker after the highest good in his profession and in all the walks of life.

The INTERNATIONAL DENTAL JOURNAL had no warmer friend than Dr. Lord. His personal efforts on its behalf were continuous to the last hours of his active life. The ethical principles it sought to inculcate were his principles, and his earnest hope was that these might take root in the dental mind as a moral power, leading it away from the influences of trade to a higher conception of those altruistic motives upon which all professions should be based.

To the writer he has been a friend and counsellor for many years, and to him, more than any other man, he owes much of that inspiring force that always surrounds with a halo the good and true wherever found.

Dr. Lord did much to advance his profession. He rarely entered





EDWARD HUDSON.

the arena of debate, but when he did it was always to aid to more practical excellence, as he understood the application of that word, to dental effort. While his methods may have been largely of the past, he was faithful to the present, and yearned with his true soul for a higher vantage-ground for his profession. He could not abide the selfishness so common among men, but with a broad liberality sought to lead to a better comprehension of that professional spirit that can alone unite all upon a foundation of success. The example of such men is the true touchstone, and those brought in contact with it are made to feel that its quiet influence has developed richer fruitage in the garden of their own spiritual natures. Others will garner the work of this man, but whatever may be said of his professional labors, to the writer his life will be a memory crowded with perpetual benedictions, in which the true and the beautiful will cluster, as the days and the years pass on into a world sadly forgetful of those who have helped to make life

“ . . . A suburb of the life elysian.
Whose portal we call Death.”

Biographical Sketch.

EDWARD HUDSON.

EDWARD HUDSON¹ was born in 1772, in county Wexford, Ireland, his parents, it is believed, being of the religious Society of Friends. Left an orphan at an early age, he was adopted by his cousin, a dentist in the city of Dublin, who stood in the foremost rank of his profession and was a man of very considerable classical and literary attainments.

Under the kind and judicious care of this relative he was entered at Trinity College, and his studies were pursued with such ardor and delight that the result realized the fondest hopes of his adopted father.

While residing in the home of his cousin Hudson rose rapidly in qualification for his chosen profession, and practised dental

¹ Elisha Townsend, in Harris's Dictionary of Dental Science, p. 369.

surgery for a considerable time with such success that his future fame and eminence were even then confidently predicted. At college Hudson had become a prominent member of several of the debating and historical societies established about this time, and at the hospitable board of his instructor and friend he had the advantage of constant communication and intercourse with men distinguished for their literary, classical, and scientific knowledge. He thus became associated on terms of the greatest intimacy and friendship with many of the most celebrated men of his day and country,—the Emmets, Shearses, Corbetts, and Tom Moore, the poet.

The societies to which Hudson belonged at length became so open and liberal in their treatment of the political and social questions that were then agitating all Ireland that the Lord Chancellor, Clare, dissolved them and ordered the banishment of such of the members as were most obnoxious, from their pronounced views, to the government. Hudson at this time escaped the hand of authority, but immediately compromised himself still further by joining the Society of United Irishmen.

Moore,¹ in his "Memoirs," says, "Among the oldest acquaintances and friends of my father and mother were some of those who were the most deeply involved in the grand conspiracy against the government, and among the new acquaintances of the same description added this year to our list were Edward Hudson—one of the committee seized at Oliver Bond's in 1798—and the ill-fated Robert Emmet. Hudson, a remarkably fine and handsome young man, who could not have been at that time more than two- or three-and-twenty years of age, was the nephew of Hudson, a celebrated Dublin dentist. Though educated merely for the purposes of his profession, he was full of zeal and ardor for everything connected with the fine arts; drew with much taste himself, and was passionately devoted to Irish music. He had with great industry collected and transcribed all our most beautiful airs, and used to play them with much feeling on the flute. I attribute, indeed, a good deal of my own early acquaintance with our music, if not the warm interest which I have since taken in it, to the many hours I passed at this time of my life *tête-à-tête* with Edward Hudson,—now trying over the sweet melodies of our

¹ *Memoirs, Journal, and Correspondence of Thomas Moore*, edited by the Right Hon. Lord John Russell, M.P., p. 35.

country, now talking with indignant feeling of her sufferings and wrongs."

After his first difficulties with the government, Hudson had determined to leave Ireland and go to London in order to pursue the practice of his profession, but before he could depart, he and twenty-two other leaders of the United Irishmen were seized and transported to Fort George, in Scotland. While confined here he was visited professionally by many of the nobility and gentry of the surrounding country, and so well satisfied were they with his skill and integrity, that not only were large fees paid him very cheerfully, but great regret expressed when by his liberation from confinement his services could no longer be obtained. Being released, at the Peace of Amiens in 1802, from his long and tedious confinement of four years, Hudson abandoned his original design of settling in London and came to Philadelphia.

He began the practice of dentistry some time after his arrival in that city (probably about 1805), where he found but one gentleman who had obtained the full confidence of the public, Mr. James Gardette, a practitioner of high standing and acknowledged skill, which, together with his honesty and integrity, rendered him in every way worthy of the reputation he enjoyed.

During the early years of Dr. Hudson's residence in Philadelphia he was induced, probably by glowing accounts and representations of sudden acquisition of wealth, to engage in two distinct partnerships, neither of which seem to have been fortunate.

His first partnership was with his father-in-law, Mr. Patrick Byrne, with whom he embarked in the stationery business. This, however, was soon relinquished.

Thomas Moore was travelling in America about this time, and an extract from a letter to his mother presents another fine trait in Hudson's character,—the constancy and devotion with which he adhered in his adopted country to the republican sentiments avowed in Ireland, and which had made him a martyr and an exile from his home.

"I shall leave this place (Baltimore) for Philadelphia on to-morrow or the day after. I shall see there poor Edward Hudson, who, if I am rightly informed, has married the daughter of a very rich bookseller and is taken into partnership by the father. Surely, surely *this country* must have cured him of republicanism. . . . I have seen Edward Hudson; the rich bookseller I had

heard of is Patrick Byrne, whose daughter Hudson has married; they are, I believe, doing well. I dine with them to-day. Oh, if Mrs. Merry were to know that! However, I dined with the consul-general yesterday, which makes the balance even. I feel awkward with Hudson now; he has, perhaps, had reason to confirm him in his politics, and God knows I see every reason to change mine." ¹

"It is not difficult," wrote Dr. McQuillen, "to conceive why Moore had reason to say, '*I feel awkward with Hudson now.*' Unfortunately for the poet, the Prince Regent had noticed him and the nobility of England, from the highest to the lowest, had flattered and caressed him to such an extent that they sapped his vertebral column, and he was unable to stand up before the true and sturdy associate of former days." ²

At a subsequent period Hudson engaged in brewing, and for a time the firm seemed to be in a prosperous condition, but soon became suddenly and deeply involved, and that to an extent for which no remedy remained except the last and most trying one, the relinquishment of the whole business into the hands of the creditors. The firm paid a percentage of its debts and received a full release from all its liabilities.

It is characteristic of Hudson that he, in spite of his release, eventually paid from the income of his professional practice all that part of the original indebtedness, with interest, for which he had received the release.

After the first misfortune Hudson immediately resumed the practice of the profession which he had originally chosen, and for which he was so eminently qualified both by natural genius and education. He did not relinquish his practice on entering into the second partnership, but continued to pursue it during the whole time the connection existed, the majority of his patients and friends gladly returning to him as soon as it was known he had resumed the duties of his office. This enabled him to liquidate every claim which the unfortunate speculation had created.

From this time Dr. Hudson resumed the cheerful and bright-hearted temperament which had been habitual to him, but which, in consequence of the many and sad reverses to which he had been subjected, added to severe domestic afflictions, it was feared by his

¹ *Memoirs, Journal and Correspondence of Moore*, p. 76.

² *Dental Cosmos*, vol. iii. p. 94.

friends he had lost forever, and from this period also his professional business rapidly augmented and his circumstances became easy.

The personal appearance of Dr. Hudson was highly prepossessing. Taller than ordinary,—Moore refers to his “Herculean frame,”—his fine figure was well proportioned and graceful, and the nobility of his soul was fitly indicated by the outward grace and dignity of his bearing.

All who approached him were delighted with the blandness of his manners, his equanimity of temper, which nothing seemed ever to disturb, and those who knew him intimately respected and prized him for the exceeding goodness and sincerity which shone so brightly conspicuous in his character. By his patients he was idolized as few of his professional brethren can ever expect to be. His advice was imparted with a modest bearing which charmed, but with a quiet confidence which carried a conviction of his admirable skill to the minds of all by whom he was consulted.

Hudson’s standard of excellence in dentistry was not only high but for the time somewhat novel.¹ Eleazar Parmly says of him, “We are probably more indebted to his success than to that of any other man for the importance which was attached at that period to operations which were intended to *preserve* the natural teeth in their natural state.” For “by the complete success attending the practice of this great man, the public were soon convinced that teeth could be saved,” instead of being extracted.

“The surgical department embracing all required operations on the living teeth . . . was as well understood and as perfectly and thoroughly practised by Hudson . . . as by any operators who ever lived, either before or since that period.”²

In the *Dental Cosmos* for September, 1861,³ Dr. McQuillen wrote:

“Possessing, as Hudson unquestionably did, natural endowments, extensive attainments, and an enlarged experience which eminently qualified him to contribute to the science of the profession, it is a matter of regret that he did not place something on the written page which might have advanced the interest of sci-

¹ Dexter’s History of Dental and Oral Science, p. 14; Dental Advertiser, vol. ii. p. 3.

² American Journal of Dental Science, 1st series, vol. iii. p. 8.

³ Dental Cosmos, vol. iii. p. 94.

ence and lightened the labors of less favored practitioners of his own and the present day. This remark, however, is not made in the spirit of fault-finding, for it must be admitted that one who rendered such valuable and lasting service as an operator that his work stands as an enduring monument, worthy of imitation, and his name is mentioned with a respect amounting to veneration by the community, and the profession thirty years after his body was laid in the grave, might claim exemption from the discharge of duties which, to a great extent, are regarded as binding upon those engaged in the practice of the profession at the present period. Again, isolated as he was, with few if any professional associates, he lacked that stimulus to exertion which is ever found in societies established for the cultivation of science. There can be little question, however, if the material had existed for the formation of such associations, and steps had been taken in that direction, that his ardent temperament would have carried him into such a movement *con amore*, and that his unfaltering steadiness of purpose would have kept him at his post, as an indefatigable and invaluable coadjutor, until the day of his death.

"His sphere of usefulness was extended, but it might have been boundless had he taught others how to produce the results which have placed his own name in such an enviable position in the estimation of his patients and the profession he honored."

Dr. Hudson died in January, 1833, at the age of sixty-one years, deeply lamented not only by his immediate family, but by a large circle of attached and devoted friends, among whom were numbered many of the most distinguished of the scientific and literary persons resident in Philadelphia.

In closing his biographical sketch of Dr. Hudson (from which most of the above paper is taken), Elisha Townsend says, "We are aware our words fail to do justice to the many excellencies and virtues which distinguished Dr. Hudson. To those that knew him they are not needed; to those who knew him not, what has been said may serve to give a faint idea of the character of this most excellent man and truly eminent dentist."

CHARLES McMANUS, D.D.S.

[NOTE.—The following copy of a bill rendered by Dr. Hudson in 1825 is kindly furnished the INTERNATIONAL DENTAL JOURNAL by Dr. Emma Eames Chase, of St. Louis, the original being in her

possession. This bill is interesting from the fact that Dr. Hudson charges for "stuffing the cavity of one tooth from the end of the root with gold." This, as far as the writer is aware, is the first recorded account of filling root-canals.—ED.]

Sup. Margaret Callender's acct with P. Hudson
 1824 Nov }
 Dec? }
 1825 Jan? }
 Apr? }
 8. Extracting eight teeth - stuffing
 85. seventeen cavities with gold
 10. Stuffing the cavity of one tooth from
 the end of its root with gold -
 5. Cleaning her teeth - cutting out
 4. four decays -
 Rec. in full Edward Hudson \$112.

FAC-SIMILE OF A DENTAL BILL RENDERED IN 1825.

Domestic Correspondence.

NEW YORK LETTER.

TO THE EDITOR:

SIR,—The regular monthly meeting of The New York Institute of Stomatology was held at the office of Dr. S. E. Davenport, on Tuesday, April 1. That all-important topic, "Orthodontia," was the paper for the evening.

The paper, "Stray Thoughts about Regulating," was presented by S. E. Davenport, M.D., D.D.S., of New York City. He pre-

sented in a clear and concise manner his method and the advantages which he claimed for it, also other important points bearing upon the subject.

Primarily his appliances are made removable. As to the arguments advanced for and against removable appliances in regulating, the doctor dwelt at some length on his method, consisting mostly of rubber plates with springy German silver wire attachments, and in some indicated instances he uses screws or other methods. He touched upon the importance of properly diagnosing each case, of taking impressions, of studying the casts and comparing them with the patient's face before fully deciding upon the course to pursue. The principle of separating teeth by the fish-line method he discussed, the manner of adjusting it, and its relative value in regulating. He considered the desirability of avoiding extraction in nearly every instance; clearly expressing reasons for the position taken by him. For, as he said, without extraction we have, in the crowded arch, only to expand the arch and rearrange the teeth, while extraction makes the condition at once abnormal.

He discussed his methods of expanding the upper and lower arches, and many other points of such great practical value that the careful study of this important paper is earnestly recommended. He gave credit to Dr. V. H. Jackson for systematizing the use of wire cribs, and also for his many valuable contributions on orthodontia.

Dr. J. N. Farrar, of New York City, discussed the paper. Among other things stated was that of advocating extraction in indicated cases. Drs. Littig, Kimball, Gillett, and Bogue, of New York, and Ames, of Boston, were among those who joined in the interesting discussion that followed. The many present listened to it with great interest, and felt more than repaid for having been so fortunate as to be present at the reading and discussion of so valuable a contribution to dental literature.

Under incidents of office practice, which preceded the paper of the evening, Dr. Wilson presented a very interesting case of the retarding of the upper central and lateral incisors by a deciduous tooth, which he discovered, by means of the radiograph, embedded in the jaw-bone, and, the obstruction being removed, the doctor hopes to eventually bring the teeth into their relative proper positions.

On Tuesday, April 8, the regular monthly meeting of the First

District Dental Society was held, the evening being devoted to the election of officers for the ensuing year, and also the reading of the annual reports, which were very favorable indeed.

Those who heard Dr. Charles McManus, of Hartford, read a paper on "The Makers of Dentistry," before the New York Odontological Society, on April 15, will ever remember it as intensely interesting and instructive, and the great value of the paper is at once apparent from the fact that after its close Dr. S. G. Perry moved that copies of it be printed and distributed.

With the stereopticon slides Dr. McManus threw upon the screen the portraits of the makers of dentistry, commencing with Ambroise Paré, "the barber surgeon," who died about 1790, and who really was one of the founders of dentistry. He displayed portraits of a long line of illustrious men who were instrumental in developing and promoting the very best and highest interests of our profession. It is a work that should be duly printed and adopted as a text-book by all the dental colleges for students, and even older practitioners, who after appreciating the many trials which the founders endured are bound to receive some inspiration from the work.

Among other points brought out was that of an expensive edition that was published by Fouchard in 1728; of how John Hunter, an Englishman, practised about a century ago; of the first dental company formed in this country for the practice of dentistry, started in Boston in 1636, and known as "The Plymouth Company;" of how John Mills started practising in New York City in 1735; of how Joseph Lemaire, a young French army officer, practised in and about the army during the Revolutionary War; of James Gardette, who was the first to use gold-foil; of John Greenwood, Washington's dentist; of J. R. Spooner, the first to use arsenic in 1836; of Dr. H. H. Hayden, one of "the noblest of them all," who did so much to further the interests of dentistry; of Drs. C. A. Harris, Horace Wells, Dr. Riggs; of Dr. Arthur, one of the first to advocate the annealing of gold-foil; of Dr. J. B. Morrison, of dental engine fame, and many others. In each instance Dr. McManus gave a brief biography, and brought out most admirably the respective dominant characteristics of each dentist.

The afternoon clinic was also well attended, and many valuable practical illustrations were given. Among those that might be mentioned were Dr. W. T. Shields's method of utilizing saddle-back

teeth in the construction of æsthetic bridge-work and Watkins describing the method of examination of fresh of the human blood with the microscope, for the purpose of nosing certain abnormal conditions of the system, some are existent in cases of pyorrhœa-alveolaris.

“LOCH

APPOINTMENT OF DENTISTS IN NEW YORK HOSPITALS.

TO THE EDITOR:

SIR,—In the March number of the *INTERNATIONAL JOURNAL*, regarding the discussion of Dr. Charles F. Allen, “What should be the Relation of our Government to the Dental Profession?” I would like to say that during the discussion R. H. M. Dawbarn stated, on page 186, “I am glad to see your branch of our profession is at last being recognized in New York City and the Kings County) dental surgeons are now on the staff. . . . At the present time these dental surgeons in New York Hospital occupy the same positions as the pathologists; they have all other privileges of the medical board, but they are not allowed to vote.” At the annual meeting of the medical board of the City Hospital, December, 1901, Dr. Dawbarn moved that the board to grant the present dental staff the privilege to vote, which was carried. At the present time the dental surgeons are on the staff and have the same privileges as other members of the medical board. This is the first recognition of Dental surgeons in a New York Hospital, and it has been brought about through the services of Dr. Dawbarn and his untiring efforts in our behalf, to whom all praise is due and should be given. This recognition of dental surgery as a special branch of medicine is a step forward in our relation and good fellowship with the medical profession.

Very truly yours,

W. C.

[The fact may not be generally known that a full-time position of dental surgeon in New York Hospital has for a year past been connected with the Pathology Department, and also in addition several young graduates have been appointed as residents.—ED.]

Miscellany.

TO VARNISH THE INSIDE OF CAVITIES WITHOUT TOUCHING THE MARGINS WITH THE VARNISH.—Use an instrument having a swollen end, either bulbous or fan-shaped. The little tool used by jewellers for oiling watches answers the purpose. It works on the principle of attraction. The swollen end holds by attraction the drop of varnish, thus preventing it from running up the shank. To further aid in this, do not dip it deep into the varnish. When touched to the tooth, the superior attraction of the larger body causes the liquid to leave the instrument and spread over the walls of the cavity.—*Pacific Medical Journal*.

[The attraction in this case is nothing more than that of adhesion, and the size of the bodies has no practical influence.—Mc.]

HYDROGEN DIOXIDE FOR POWDER-STAINS.—Recently Dr. J. N. Rhoads reported a case in which powder-stains had been removed by the use of hydrogen dioxide. In a recent issue of the *American Medicine* he published his experience of a single case. (A synopsis was noted in the *Monitor*, April 15.)

In an issue of the same journal, June 1, Dr. C. R. Clark, of Youngstown, Ohio, reported a similar case in which the face was black with stains and embedded particles of powder. Applications were made with lint saturated with glycerin, one part, and hydrogen dioxide, three parts.

At the end of two days all discoloration had disappeared.—*Medical and Surgical Monitor*.

CARE OF THE TEETH.—The following are a few thoughts taken from an editorial in the May number of *Medicine* for 1901:

In no department of medical science has bacteriology made greater progress than in relation to the disorders of the teeth. Hygiene of the teeth, like that of the body in general, is compre-

hended in the word cleanliness. Additional importance is given to the matter by the great frequency of so-called pyorrhœa alveolaris, or what is better known as gingivitis.

The hygiene of the mouth has not been taught as earnestly nor as enthusiastically as it should be, notwithstanding the fact that the general health is largely dependent upon the digestion, and the latter upon the ability to masticate the food.

In addition, the suppurative condition which we have spoken of as gingivitis undoubtedly leads to direct infection of the alimentary tract. Numerous cases are on record in which grave digestive disturbances were at once relieved by the cure of the suppurative inflammation of the gums.

[There is no doubt that many disorders of a constitutional nature are produced by the absorption of the products of infection and suppurative inflammation from the oral cavity.

The medical profession concerns itself mainly with the cure rather than the prevention of disease, and this subject has not been given the consideration that its importance warrants. Much disease would be prevented by proper attention to oral hygiene. May not gout and rheumatism more often be caused by pyorrhœa alveolaris than be the cause of this pyorrhœa.—Mc.]

USE OF PRESERVATIVES FOR SOLUTIONS OF SUPRARENAL EXTRACT.—When the extract of suprarenal gland was first introduced into medicine as a valuable constrictor of those blood-vessels with which it was brought into contact, much difficulty was found in preserving solutions of it from decomposition and change, and various substances were added to it to prevent alterations taking place in its character. Boric acid and similar preservatives were employed without much success; and recently in the *New York Medical Journal* of March 9, 1901, Oppenheimer records the results which he has obtained by adding resorcin in the strength of one per cent. to the solutions of suprarenal gland with the object of preserving them. He states that by this means he has been able to counteract all deteriorating influences. As a matter of fact, if suprarenal gland in its original form is employed, we believe that the best preservative to be added to it is chloretone, which is not only an anæsthetic but an antiseptic in its influence upon the

mucous membranes, and which certainly seems to increase rather than to decrease the activity of the extract. With the advances which are being made, however, in the preparation of suprarenal gland for medicinal use, it would seem probable that even so useful a preservative as chloretone will eventually not be required, and there is now upon the market, under the name of *adrenalin chloride*, an active principle of suprarenal gland which in even so diluted a solution as 1 to 20,000 exerts a physiological effect, and which when dissolved in normal salt solution in the strength of 1 to 5000 is a most efficient local vasoconstrictor.—*Therapeutic Gazette*.

GOLD FILLINGS IN THE MOSAIC PERIOD.—The *Detroit Medical Journal* culls from the *Red Cross Notes* the following:

The oldest medical writing which has been discovered is the Ebers Papyrus in the University Library at Leipsic containing over one hundred pages, in hieratic characters. On one of the leaves is evidence that this manuscript dates from at least 1550 B.C., or before the book of Exodus was written. Evidence is not wanting also to show that this is only a copy of a much earlier work. The entire compilation is claimed to be hermetic,—i.e., inspired.

More than seven hundred materials from the mineral, vegetable, and animal kingdoms are mentioned as medicaments, and the mixtures prescribed are generally complex, ten or twelve ingredients entering thereinto. It is also worthy of note that cotton is mentioned as an application to wounds, and even in that early age teeth were filled with gold.

FASTENING A MATRIX WITH OXYPHOSPHATE.—When necessary to use a matrix, I fasten it as follows: Take quick-setting oxyphosphate of zinc and place it around the soft copper strip which has been adapted to the cavity. Then in five minutes you can mallet against it from any direction without danger of loosening it.—J. N. CROUSE, *Dental Review*.

[It was in the discussion of a paper entitled "Matrices for Approximal Gold Fillings" that brought out the above method

of fastening a matrix. The unyielding nature of oxy cement around a matrix would prove undesirable and result in poor margins to the gold filling. If the soft copy be fastened around the tooth with several turns of a ligature will give enough to allow the gold to come over the margin of the cavity to make a perfect filling.—McCLAIN.]

USE OF CORK BETWEEN THE TEETH WHILE MALLETING. You would have your patient thank you, use a piece of cork square, between the teeth when inserting a gold filling. The force of the mallet blows is less severe on a tooth thus supported by a cushion of cork.—*Dental Hints.*

COLLODION AS A MODEL VARNISH.—Dr. D. H. Payne, in *Items of Interest*, recommends collodion as a better varnish than sandarach for varnishing plaster models previous to painting with rubber for vulcanizing. It does not adhere to the vulcanized surface and leaves a smooth and hard surface. To separate a model from a plaster impression varnish with thin collodion and brush off the surface with talcum powder, brushing off all loose collodion.—*Dental Register.*

A NEW IMPRESSION MATERIAL.—John Girdwood, in a paper read before the American Dental Society of Europe, described the advantages of sealing-wax over plaster and modelling clay for taking partial impressions and impression and bite for crown and bridge-work. When the bite is close, plaster frequently fractures so badly that it is next to impossible to piece it together. Impression compound, on the other hand, cannot be made sufficiently hard and unyielding as not to bend or drag on removal. He claims that sealing-wax combines the properties of both in addition to having special advantages of its own.

He states that he has used sealing-wax as an impression material in crown- and bridge-work for several years. There are several varieties of sealing-wax. The highest grade is composed of lac and vermilion, and the lowest grade of rosin and cheap

matter. It is the lac which makes it valuable to the dentist. He says, "A trial of the improved wax at once showed me I had obtained a suitable material for my purpose, but wishing to see whether it could be further perfected, I stated my requirements to the manufacturers, stipulating for a material which would soften readily, remain plastic until nearly cold, and retain that condition long enough to enable me to take any impression, or impression and bite combined. In addition to the lac and vermilion, some other agent was added to give additional softness. An alteration in the proportion of the ingredients enabled them to furnish me with a material which I found all that could be wished."—*Dental Review*.

TEST FOR ADULTERATED ZINC SALTS.—The zinc salts most likely to be unsatisfactory are the oxide and the chloride. The oxide should be an impalpable powder free from grit. The color is a secondary consideration, and may be disregarded. The bulk of the zinc oxide of commerce is made for paints, in which whiteness is the first consideration.

The chloride frequently contains oxychloride, which is insoluble in water. Dissolve a little of the sample and the presence of this impurity will be shown.—*Australian Journal of Pharmacy*.

Current News.

BILLS BEFORE THE SENATE, FIFTY-SEVENTH CONGRESS.

Two bills have been presented to the Senate of the United States, April 24,—No. 5419, to add a corps of dental surgeons to the Bureau of Medicine and Surgery of the navy, and 5420, to reorganize the corps of dental surgeons attached to the Medical Department of the army. Both bills were read twice, and the first was referred to the Committee on Naval Affairs and the second to the Committee on Military Affairs. These bills are exactly the same as presented in the House of Representatives, and both ap-

proved by the Surgeon-General of the Navy and the Surgeon-General of the Army.

" A BILL TO ADD A CORPS OF DENTAL SURGEONS TO THE BUREAU OF MEDICINE AND SURGERY OF THE NAVY.

" Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to the Bureau of Medicine and Surgery of the Navy there shall be attached a corps of dental surgeons, which corps shall not exceed in number the actual requirements nor the proportion of one to one thousand authorized by law for the naval and marine military service and training schools.

" The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotion within said dental corps the grades named shall correspond to the grades of the medical corps, designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

*" SEC. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States between twenty-one and thirty years of age, graduates of standard dental colleges, of good moral character, of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination, which shall include tests of skill and proficiency in practical dentistry and the usual subjects of a standard dental college course: *Provided*, That there shall be first selected a member of the dental profession who is a citizen of the United States and a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations and for assisting in organizing, equipping, and supervising the operations of the others, who shall be first appointed to the grade of dental surgeon: *Provided, further*, That the dentist now employed at the Naval Academy shall not be displaced by the operation of this Act."*

" A BILL TO REORGANIZE THE CORPS OF DENTAL SURGEONS ATTACHED TO THE MEDICAL DEPARTMENT OF THE ARMY.

" Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to

the Medical Department of the Army there shall be attached a corps of dental surgeons, which corps shall not exceed in number the actual requirements nor the proportion of one to one thousand authorized by law for service in the Regular Army.

"The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotion within said dental corps the grades named shall correspond to the grades of the medical corps, designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

"Sec. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States between twenty-two and twenty-nine years of age, graduates of standard dental colleges, of good moral character, of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination which shall include tests of skill and proficiency in practical dentistry and the usual subjects of a standard dental college course: *Provided*, That contract dental surgeons attached to the Medical Department of the Army at the time of the passage of this Act may be appointed, three of them to the grade of passed assistant dental surgeon and the others to the grade of assistant dental surgeon."

AMERICAN DENTAL SOCIETY OF EUROPE.

THE next meeting of this society will be held in Stockholm, August 12 to 15, inclusive.

A cordial invitation is extended to the profession to meet with us.

This date will enable those attending the National at Niagara, July 28 to 31, to be present by sailing *via* Hamburg after that meeting.

With the view of facilitating matters for those who propose attending this meeting of the American Dental Society of Europe, I beg to append the following: Owing to the heavy booking of steamer berths, it would be well for intending voyagers to secure their return passages in advance. The best way to reach Stockholm is *via* Hamburg.

1. Travel tickets only for the journey: Hamburg, Kiel, Corsor, Copenhagen, Malmo, Stockholm; returning to Hamburg by the same route, £6 11s. 3d. per adult, first class; £5 5s. 3d. per adult, second class.

2. Travel tickets only for the route: Hamburg, Lubeck, and steamer direct to Stockholm, returning to Hamburg by the same route, £4 4s. 3d. per adult, first class; £3 4s. 9d. per adult, second class.

In the case of route No. 1, the validity is forty-five days, and for route No. 2, the season. As much notice as possible should be given to secure accommodation. The times between Hamburg and Stockholm are as follows:

Route No. 1: Depart Hamburg, 8.53 A.M. or 11.07 P.M.; arrive Copenhagen, 6.54 P.M. or 10.05 A.M.; depart Copenhagen, 7.45 P.M. or 11.15 A.M.; arrive Stockholm, 11.25 A.M. or 6.45 A.M.

Route No. 2: Depart Hamburg, 12 noon, 2 P.M., or 3.40 P.M.; arrive Lubeck, 1.21 P.M., 3.32 P.M., or 4.53 P.M.; depart Lubeck, about 6.15 P.M., Wednesdays and Saturdays, occupying about forty-two hours, but times for the coming season not yet fixed.

Any further information that may be desired could be obtained from Messrs. Cook & Sons, 261, 262 Broadway, New York.

L. J. MITCHELL,
Honorary Secretary.

39 UPPER BROOK STREET, LONDON, W.

NEW JERSEY STATE DENTAL SOCIETY.

COMMITTEE ON ART AND INVENTION OF THE NEW JERSEY STATE DENTAL SOCIETY.

To all those who during the past year have invented or designed any instrument, appliance, method, or operation in or applicable to the art and science of dental surgery.

The New Jersey State Dental Society respectfully solicits you to send a contribution of such article or appliance, that you have invented or designed, with full description of the same.

All appliances will be classified and receive due consideration at the hands of the Society. We only stipulate that all articles sent shall be of practical value and of general interest to the profession at large.

We will make an interesting exhibit under the head of Art and Invention; one that will be of value not only to the profession, but also to the inventors and designers.

A full report will be made and printed in the Society proceedings.

Send contributions by June 24, and not later than July 1. Otherwise they may not receive proper classification.

All appliances will be well taken care of and returned to the contributors after the session of the Society, which will be held in the Auditorium at Asbury Park, New Jersey, July 16, 17, and 18, 1902.

This year's session will be one of the largest, if not the largest, both in interest and attendance, of any previous session of the New Jersey State Dental Society, which is known for its interesting, valuable, and well-attended sessions.

W. G. CHASE,
Chairman.

1018 WITHERSPOON BUILDING, PHILADELPHIA, PA.

NATIONAL DENTAL ASSOCIATION

In accordance with the result of the recent postal-card vote, the date of the coming meeting of the National Dental Association will be changed from the first Tuesday of August to Monday, July 28, and will continue four days.

A. H. PECK,
Recording Secretary.

NORTH CAROLINA STATE BOARD OF DENTAL EXAMINERS.

THE North Carolina State Board of Dental Examiners will meet Monday, Tuesday, and Wednesday, June 16, 17, and 18, 1902, at Raleigh, N. C. For further information write the undersigned.

R. H. JONES,
Secretary.

WINSTON-SALEM, N. C.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE nineteenth annual convention of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, New York, July 24. The Executive Committee will meet at eleven A.M., July 23.

All colleges are respectfully referred to the rule requiring their annual announcement be in the hands of the Executive Committee at this meeting.

H. B. TILLEY,

S. W. FOSTER,

Secretary Executive Committee, N. A. D. F.

NEW ENGLAND ASSOCIATION OF DENTAL EXAMINERS.

THE sixth annual meeting and banquet of the New England Association of Dental Examiners was held at Hotel Marlborough, Boston, Mass., April 22, 1902. All but one of the New England States were well represented. Dr. William Carr and Dr. Jarvie, of the New York board, and Dr. Charles A. Smith, of the New Jersey board, were guests of the Association. The subjects of "Methods of conducting Examinations" and, "How best to enforce Dental Laws" were the subjects for discussion.

The officers elected are: President, Dr. D. W. Felloe, of Portland, Me.; Vice-President, Dr. P. J. Heffern, of Pawtucket, R. I.; Recorder, Dr. George A. Maxfield, of Holyoke, Mass.; Secretary, Dr. John F. Dowsley, of Boston.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE nineteenth annual session will convene at the International Hotel, Niagara Falls, on Friday, July 25, at ten A.M., and continue in session until the adjournment.

It is earnestly hoped that this session will see a larger representation of delegates than any heretofore held. Every effort is being asked to make provision now to send delegates. Niagara Falls, N. Y., July 1, 1902.

an ideal place for meeting, and the International Hotel is the best, the service and appointments first class, and the rates will be according to location of the room. Rates, from \$3.50 to \$4.50 per day, being a reduction of fifty cents per day from the regular rates. It is expected the usual reduction in railroad fare will be arranged in time.

Additional notice will be given in July journals.

J. ALLEN OSMUN,
Secretary.

HARVARD DENTAL ALUMNI ASSOCIATION.

THE place of meeting of the Harvard Dental Alumni Association for the thirty-first annual banquet, Monday evening, June 23, 1902, has been changed from Young's Hotel, Boston, to the Harvard Union, Cambridge, Mass.

WALDO E. BOARDMAN,
Secretary.

Boston, April 22, 1902.

NORTHERN OHIO DENTAL ASSOCIATION.

THE forty-third annual meeting of the Northern Ohio Dental Association will be held in Cleveland, Ohio, June 9, 10, and 11, 1902.

W. T. JACKMAN,
Corresponding Secretary.

PENNSYLVANIA STATE DENTAL SOCIETY.

THE following are the officers and committees of the Pennsylvania State Dental Society:

President, M. H. Cryer, Philadelphia; First Vice-President, R. H. Nones, Philadelphia; Second Vice-President, J. E. Libbey, Pittsburg; Recording Secretary, C. V. Kratzer, Reading; Corresponding Secretary, V. S. Jones, Bethlehem; Treasurer, R. H. D. Swing, Philadelphia.

Board of Censors.—W. D. DeLong, Reading; H. DePuy, J. E. Libbey, J. C. Hertz, C. R. Scholl.

Executive Committee.—R. H. Nones, 1708 Chestnut Street, Philadelphia; Grant Mitchell, Pittsburg; H. M. Beck, Wilkes-Barre.

Legislative Committee.—G. W. Klump, Williamsport; J. A. Libbey, Pittsburg; A. S. Koser, Harrisburg; H. S. Seip, Allentown; W. E. Van Orsdel, Sharon.

Committee on Enforcement of Dental Law.—F. D. Gardiner, Chairman, 1516 Locust Street, Philadelphia; H. Zimmermann, Annville; H. W. Bohn, Reading; D. C. Dunn, Meadville; Herman Haupt, Pittsburg; C. J. Phillips, Pittsburg; C. S. Beck, Wilkes-Barre; C. H. McCowen, West Chester; B. F. Witmer, Lancaster; Robert Huey, Philadelphia; C. C. Walker, Williamsport.

Clinic Committee.—J. T. Lippincott, 1427 Walnut Street, Philadelphia; J. E. Libbey, Pittsburg; M. I. Schamberg, Philadelphia.

Exhibit Committee.—J. P. Nichol, 124 South Eighteenth Street, Philadelphia; J. C. Hertz, Easton; H. W. Arthur, Pittsburg.

Publication Committee.—C. V. Kratzer, Reading; H. B. McFadden, Philadelphia; R. H. D. Swing, Philadelphia.

Committee on Ethics.—I. N. Broomell, 1420 Chestnut Street, Philadelphia; J. A. Libbey, Pittsburg; H. E. Register, Philadelphia.

Committee on Oral Hygiene.—M. I. Schamberg, 1636 Walnut Street, Philadelphia; W. D. DeLong, Reading; E. W. Bohn, Reading; H. DePuy, Pittsburg; H. N. Young, Wilkes-Barre.

The annual meeting will be held at Bedford Springs, July 8, 9, and 10.

V. S. JONES,
Corresponding Secretary.

BETHLEHEM, PA.

TENNESSEE DENTAL ASSOCIATION.

THE thirty-fifth annual meeting of the Tennessee Dental Association will take place at Mont Eagle, Tenn., beginning Tuesday, July 8, 1902, and continuing three days.

A programme of unusual interest, both as to papers and clinics, has been prepared.

Mont Eagle is a most popular summer resort, so a social as well as a professional treat is in store for those who attend.

The railroads have given a one-and-one-third rate on the certificate plan, and the hotel accommodations are up to date and reasonable.

All ethical dentists are invited to be present and take part in the proceedings.

A. SIDNEY PAGE,
Secretary.

COLUMBIA, TENN.

NEW JERSEY STATE DENTAL SOCIETY MEETING.

IN no one profession have there been so many kaleidoscopic changes in methods as in modern dentistry. The practice of to-day is succeeded on the morrow by an improved method. The mechanic, the electrician, the chemist, the microscopist, the histologist, the physician, the biologist, the specialist of the many phases, and the realms of materia medica are all called upon to contribute to the avaricious maw of the present day dentist. The day has passed when the man can sit in his office and read in a desultory way one dental journal, never visit a dental society, and call himself a dentist. The excellence of the professional man is due mostly to the stimulus of the societies; the more meetings he attends the better dentist he is; he must be up and doing and lead a strenuous life; the old order has passed away, the new is on. Show me a community where the societies are progressive and well attended, and the resultant is more men respected professionally and socially, all other things being equal.

A State dental meeting nowadays must be a post-graduate course in dentistry, and in the thirty-odd years of existence the New Jersey State Dental Society has tried to live up to the fact as an argument in dental education and evolution. With this argument emphasized, we ask you, the great body of ethical and progressive men in Jersey and adjacent States, to cut off the week of July 17 and come to our meeting, and let us give you ocular proof of the object we will try and present to you in the wonderful exhibit of 1902,

up-to-date electrical appliances, inlay furnaces, chairs improvements in gold and base metals for operative and work, new and ingenious instruments for the office and porcelain teeth and crowns, and last of all clinics (many performed before you by eminent operators that is of more than a 12mo essay of descriptions.

Asbury Park is a pleasant place to visit. The railroad reasonable, the hotel rates moderate, the scenery is beautiful, the social element all to be desired.

To the stranger we will try and make the visit profitable, and the accomplished members of the executive committee will assuage the thirst like the oasis in the desert.

Last year seven hundred dentists registered an attendance. This year we look for even a thousand.

The Columbia will be the head-quarters from which the net's flag flies. Proprietor J. H. Jones will try his best to accommodate all who favor him with the request in a reasonable way with the rate of \$2.50 and \$3.50 per day.

The auditorium, the largest building on the Jersey shore, will be used in its entirety for the exhibits and meetings.

Again we ask you to cut the time off now and meet us.

CHARLES. A. MEEKER, JR.

H. S. SUTPHEN, D.D.S.

Assistant Secretary

NEWARK, N. J.

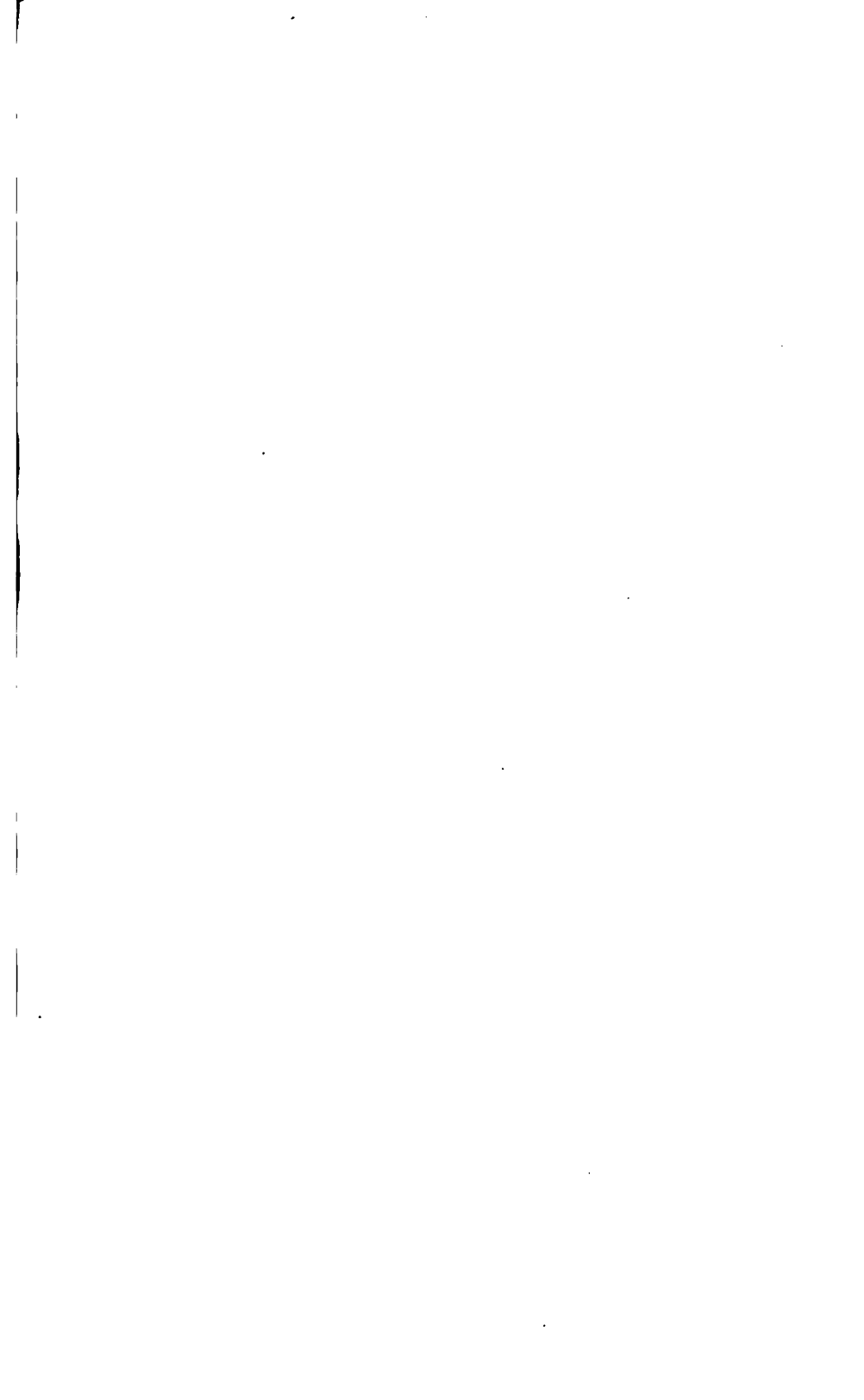
COLORADO STATE DENTAL ASSOCIATION

THE sixteenth annual meeting of the Colorado State Dental Association will be held in the Alta Vista Hotel, Colorado Springs, June 17, 18, and 19, 1902.

A good meeting is assured. Special rates at the hotel and cordial invitation is extended to the profession.

W. A. BROWN

70 BARTH BLOCK, DENVER, COL.





BENJAMIN LORD

THE

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Original Communications.¹

SOME THINGS I HAVE FOUND USEFUL IN PRACTICE.²

BY DR. A. H. STODDARD, BOSTON, MASS.

MR. PRESIDENT AND GENTLEMEN,—I have jotted down a few thoughts on some of the things that I have found of benefit in practice. Every man, after he has been in practice a few years, gathers certain instruments and methods which seem best suited to his needs, and become a part of his individuality. We are continually adding to and subtracting from this stock as the years go on. I have become very much attached to certain instruments which seemed indispensable, but when they were lost or broken I found others which replaced them. So with these methods and instruments I am to speak of, I may find others to take their place; but in the past, and at present, I am using them with more or less success.

Some few years ago Dr. Cooke recommended these right and left burnishers, which I will pass around, made by Mr. Grafrath, for

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Harvard Odontological Society, December 26, 1901.

plastic fillings in approximal spaces, particularly be and bicuspid. I have adopted them, and could not with them. You all may have used them, but if you should advise you to give them a trial.

A method of lining vulcanized plates with soft or I have used for some time. I thought it was original but a short time ago I saw it described in one of the terlies. I can best describe its usefulness by passing sample which was made by the Boston Dental Laboratory and by citing a few cases.

The first case, Mr. G., came to me a couple of years had full upper and lower dentures, the lower arch being the ridge having been absorbed almost entirely. The very sensitive, and it was impossible for him to eat with fort whatever. I made him an upper case first, with no difficulty, and then I made a lower case and lined soft rubber. I had to experiment somewhat in regard to thickness, and finally I made it about four thicknesses finished, and that gave quite a springy base. He was it with great satisfaction, and has used it ever since. plate a short time ago, so I had occasion to see it again rubber was in quite as good condition as it was when it. That was about two years ago. He has taken good care it was clean, and there was no disagreeable odor. It has been quite a success.

Dr. Cooke.—How many thicknesses in this plate?

Dr. Stoddard.—There were about four thicknesses of rubber.

Another case, Mrs. K., came to me. She was unable to eat hard food at all, and was living on soups and soft food. Her system was in very bad condition on account of it, and a physician told me that something must be done in the matter. She had several lower plates, and she had a full upper denture. It was only the lower that gave trouble. The arch was better marked in that case, but the tissues were very sore indeed. After experimenting some I lined that case with five thicknesses of velum rubber, and she has been very comfortable ever since, so far as I know.

Another case, Mr. D., had lost all of his teeth but the molars. He had been wearing a gold plate, fastened with

as he was unable to keep it up any longer, as the teeth that were clasped were lost, he had to resort to a suction plate. First, I made a gold suction plate, and he was not able to use it with any comfort; it kept dropping, etc. I finally recommended him to have a rubber plate, thinking I would get better suction with rubber, but he was not able to use that with any great success. I then made another rubber plate, and lined it with two thicknesses of velum rubber, I think, and he has been able to use that with much better success than any other plates he has had.

I had another case, Mrs. B., who was unable to keep up her plate by suction. It was rather a desperate case. She was quite an elderly lady, and it was necessary for her to wear her teeth in order to masticate properly and enunciate. And so I advised her, as a last resort, to use gum tragacanth every day sifted on to the plate. She kept it up for awhile until she got tired of it, and I then adopted this method in her case, and it has proved quite a success. She has been able to use this plate better than any that she has ever had before.

These cases, I think, prove its usefulness.

I have had some difficulty in getting corundum stones small enough to grind down gold fillings in fissure cavities in molars and bicuspsids, and when I have set them on the mandrel with shellac they almost always come off before they are worn out. Therefore, for several years I have been in the habit of making a dozen or so corundum stones with this instrument which I will pass around, and you will notice the size and thinness of the stone. I have never had any of these come off in use, although I grind them clear down to the smallest point. Here are a couple worn down, as they are generally used. Sometimes, in finishing a gold filling, I use up a stone entirely.

I should have mentioned how I set them. The bits of corundum stone are warmed in a flame, and pressed in this manner, and an ordinary bur which has been worn out and become dull is used to set it on; then I squeeze it together like that, and the surplus corundum escapes around the sides. After it has cooled I put it in the engine and run it on a file for a moment to give me a sharp, clear, well-defined edge, and then I wash it in alcohol. You can do this only with corundum which is mixed with shellac.

Some time ago oxyphosphate of copper came out as a filling-material, but, having had experience with copper and amalgam, I

allowed others to do the experimenting. Dr. Payne and others told me that they had found this useful in saucer-shaped cavities, in buccal cavities, and others, where it was not advisable to use oxyphosphate of zinc, because it was liable to dissolve. My success with this method I can best describe by citing one or two cases. I will pass around this sample of oxyphosphate of copper.

In the first case Mr. C. had large cavities in the buccal surfaces of the third molars. It was impossible to fill them with gold, and the oxyphosphate of zinc cement washed out very readily, so that at the end of six months it was necessary to refill them. Dr. Payne suggested that I try the oxyphosphate of copper. It is extremely black, and very hard to manipulate. I used it in this case, perhaps a year ago. I have seen the same patient once or twice since, and I cannot see that there are any signs of dissolving, and the filling has been entirely satisfactory.

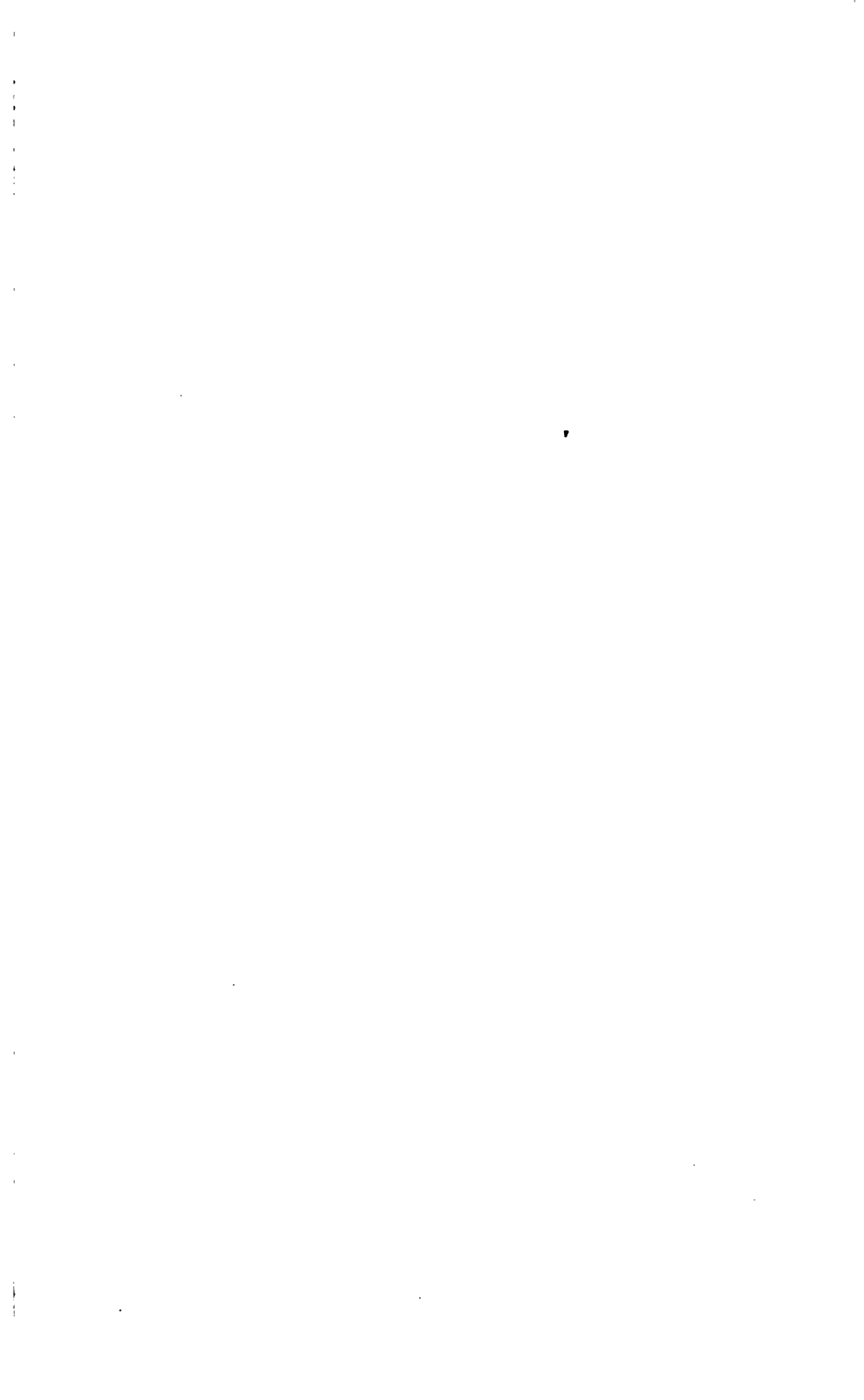
Another case, Mr. S., came to me a year ago in about the same condition, and I filled the teeth with this oxyphosphate of copper; and the last time I saw him they were in very good order.

It is very difficult to manipulate. It stains everything it touches. I mix it about as thick as thick cream. If it is much stiffer than that, it is impossible to use it satisfactorily; it becomes crumbly, but if about the thickness of thick cream it is very viscid. I carry it into the cavity on an old instrument, and then tamp it down with a piece of cotton which is moistened with saliva. If you use anything else, you will pull it out of the cavity as fast as you touch it; but in this way you can tamp it down and let it harden, and it makes a very desirable filling. But of course it is not to be used in any place except the back of the mouth, on account of its color.

A method I have used for making round inlays was shown at the Academy at the last meeting, and I will show it here for the benefit of those who did not see it at that time.

The instruments will explain themselves to a great extent. Here are a series of inlay burs, which are supplied by the dental supply companies. I have six sizes. Then I have taken a piece of ivory and cut six holes, to act as a gauge, which I keep to fit the inlays to, so that all the fitting can be done outside the mouth, and the filling can be carried into the mouth all complete. This appliance is made adjustable with carborundum pieces, made so that they can be set up to grind the porcelain rod to the desired size.





In making these inlays I first cut out the cavity in the tooth with an inverted cone or round bur. I select a size slightly smaller than one of these sizes which I have here on the gauge. Then I take a bur corresponding to the size in the gauge, and ream it out. The object in doing that is that if the cavity is cut out with the inlay bur, as soon as it strikes the bottom of the cavity it will move latterly and make the cavity elliptically, but if you use the inlay bur simply as a reamer, you get a perfectly round hole, and the inlay does not touch the bottom of the cavity at all.

Then I take a porcelain rod and grind it roughly on the lathe to correspond to the hole of the proper number in the gauge, except making it just a little bit larger, so it will not quite go into this hole in the gauge. I then set these points up, put it in the engine, and grind it down so it fits accurately into the gauge. After I have fitted it to the gauge, I use one of these thin carborundum disks and cut around the margin, snip it off, set it with cement, and polish it the same as any round inlay.

I will pass around this instrument and the gauge, and you will see I have made two or three inlays on one side. One was set with oxyphosphate of zinc, another one with Canada balsam, and two others are not set at all, but just turned in. This one which projects from the cavity is not set with anything, and you can see how tightly it clings to the margin of the cavity. This rod, which I will pass around, you will see fits into the hole in the gauge which I have marked.

The best rods for this purpose I think are made by Ash, of the English body. They are a better color and take a better polish when set. I will pass this around for your inspection.

SOME POPULAR ERRORS ABOUT MICROBES.¹

BY DR. JUSTIN DE LISLE, NEW YORK.

BACTERIOLOGY can be said to have had its beginning from the time the Dutch naturalist Leeuwenhoeck picked his teeth and examined the product of this research under what we would call to-day a small magnifying glass. This scientist was led far enough

¹ Read before The New York Institute of Stomatology, March 4, 1902.

by his investigations to detect bacteria in water, vegetable infusions, human saliva, the intestinal contents of flies, frogs, chickens, and man. In this latter observation he made the first step in modern human pathology, by noting the marked increase of bacteria in diarrhoea. These historical events took place about the year 1680, and it is certainly astonishing with what accuracy these microscopic organisms were described by the pioneer observers, descriptions that leave but little to add, even to-day with our highly perfected microscopes. Naturally I only refer to the few microbes that were observed and described, for bacteriology seems to have marched parallel with the improvements of the microscope. But even with all the advancement made in optics and mechanics, we have every reason to believe in the existence of microbes so small that our most powerful lenses do not reveal their presence, and beyond this there are no doubt other horizons not even explored in conjecture. Our microbic acquaintance now reaches to between six hundred and seven hundred different species, and yet out of the mass of facts collected and investigations that have been made in this department of botany no satisfactory system of classification has come out. Science to-day, in its relation to bacteriology, is in about the same position it was with chemistry in the latter part of the eighteenth century, and we wait upon an organizer like Lavoisier to collect and systematize this data and bring order out of chaos. Microbes are everywhere,—in the water, the air, upon our bodies, and even invading every cavity of the human economy. Environed by this myriad of apparently implacable enemies, it is a wonder that we are able to perform the simplest functions of life, we dare not go into the street, for there we are sure to meet some of our most terrible foes, like the bacilli of tetanus. In the carpets of our rooms, hanging to the walls of our apartments, and swarming over the furniture is this omnipresent host of destroyers. Even the middle of the ocean is infected, and from the highest point of Mount Blanc over three hundred different species of bacteria have been found. There seems to be no escape unless we would take to living in glass houses and stuff the chimneys with cotton, and even here we would not be safe from an affliction that is worse than an inoculation of the most virulent microbe. This disease is called *microbphobia*. It seems as though every advancement or innovation in any branch of science, by the alteration of our environment, has left its stigma upon us. We have the bicycle face and hump, the

electric light and X-ray eye, the telephone ear, etc. Lastly, this terrible microbphobia, which may mean an imaginary fear of any or even all microbes. One of these poor afflicted imbeciles will not eat certain articles of food even after it has been heated many degrees above the life limit of any microbe; another will almost die from asphyxia in trying to keep from inhaling the expired air of an invalid, in spite of the fact that air expired from our lungs is absolutely sterile, and so on up to superstition and ridicule.

Inasmuch as microbes are everywhere, the three great divisions of nature are subject to attacks from bacteria and their products. The whole animal kingdom, from the most highly organized species, like that of man, to the most primitive amoeba, and the vegetable kingdom from algæ to oak-trees, offer the richest nourishment and environment for the growth and multiplication of bacteria. The mineral kingdom is not ignored, and many examples can be cited where the life of a microbe depends upon mineral matter. According to these lines of restriction, we might come a little nearer to man's relation to bacteria, for we find that a certain class of microbes is pathogenic for animals alone; this number is forty-one. So out of nearly seven hundred different varieties of bacteria that infect the three kingdoms, only forty-one are able to attack the animal. Some of the microbes that have almost extinguished many species of animal, man not excluded, have no effect upon the vegetable world, and *vice versa*. The idea might be worth mentioning that it is quite probable many animals which have become extinct and have left only a history in fossil remains may owe their sudden extermination to a microbic invasion. But let us look again at these forty-one species of microbes that attack animals, and we find that only thirty-one are capable of infecting man. It is true there are yet many diseases that occasion great ravages in the human race, the microbe of which has not yet been isolated. However, for the time being let us be satisfied with these thirty-one species of microbes. Not a formidable number, it is true, but adversaries certainly worthy of all the acumen of science in calling forth every means of natural and artificial defence. Our ancestors in the middle ages went into battle covered from head to heel in a steel armor, but it would seem ridiculous for us to protect ourselves in any such manner, even if we substituted some lighter material. Nevertheless, nature has provided us with just such a protection, easy to carry and as impervious to microbes as the

armor of Achilles was to the shafts of his opponents. The epithelial layer of the skin and mucous membrane constitutes our coat of mail. No pathologist, bacteriologist, or biologist has ever seen a microbe penetrating the unbroken epithelium. Covered as we are inside and out with this protective layer of cells, that are so closely adapted to one another that no microbe, no matter how small, can slip between them, and no matter how strong, can force them asunder, we are absolutely proof against the penetration of any microbe. Even more than this, if a microbe does, through any break in continuity, gain access into our interior, it is, in a great number of instances, immediately seized by the phagocytes and digested. What could be more ideal! Every tissue of the human body has its means, and effective means, too, of defence against all intruders, and all these self-protecting organs incased in an absolutely impenetrable membrane.

Viewed in this light the idea changes, and instead of asking how is it possible to escape from microbes, we wonder why we are ever infected. It is always in the unguarded and unexpected moment that invasion takes place, a scratch, a tarnished spot upon our armor, and the microbe enters. A lowering of vitality due to excesses or dissipation, and the phagocyte fails to seize or digest the intruder. In one of his moments of deepest depression Pasteur was greatly encouraged by the words of an eminent surgeon, who remarked that Pasteur's great work had taught surgeons to wash their hands. Yes, but not to skin them! It looks to-day as though asepsis had swung into an extreme.

Far be it from me to cry down reasonable asepsis or antisepsis, but I do sincerely wish to raise my voice against this extreme and even dangerous method of modern asepsis. To give the details of the toilet of a modern surgeon and a description of his boudoir in one of our modern hospitals would be beyond the scope of this address, but there are certain features of his preparation so striking as not to escape the notice of the most casual observer, like washing and briskly brushing with a stiff brush his hands and arms in strong soapsuds, chlorinated lime, sal soda, and then rinsing with alcohol, bichloride of mercury, etc. What does all this do but rub off his protective epithelium and lay him liable to infection.

The daily and professional papers have just chronicled the death of a distinguished surgeon in Baltimore, as the result of a slight wound from a bristle of his brush. But the modern surgeon

is devoted to his profession and willing to sacrifice his well-being and the epithelium of his skin rather than lay his patient liable to any infection from dirty hands. Although, after all the details of this grand toilet have been strictly performed, he will confess that his hands are not really sterile; they are clean, yes; but not sterile, and the bacteriologist can prove the truth of this by making cultures from his well-washed skin. The technic of the operating-room is too complicated, and an error or oversight is almost sure to creep in. If the surgeon is painstaking and fastidious in his personal preparation, such, too, is the case with the patient. The seat of operation is scrubbed, soaped, and washed with the whole gamut of solutions, and lastly the skin for a large distance around the point of attack is scraped until, in some instances, the blood oozes through. Do you think this energetic procedure leaves a trace of epithelium, the natural wall of defence against infection? No; hardly a cell remains. There is nothing but a great unprotected surface, deprived of all external defence and gaping open in readiness to admit any and all microbes. But these surfaces are covered with antiseptic dressings.

A few days ago I witnessed a surgical operation in one of the most beautiful and modern hospitals in the world, here in the city of New York. Everything was aseptic. The operation finished, one of the nurses took out of an aseptic cupboard a roll of aseptic cotton, unwrapped its aseptic covering with her aseptic hands, but pulled out the aseptic pin that fastened this package with her septic teeth, teeth that were covered with microbes, the pus-forming microbes, perhaps other and more pathogenic microbes, and then applied this dressing to a freshly cut and largely denuded surface.

In view of just such trivial mistakes, that could lead to very serious consequences, many eminent surgeons are now considering the idea of abandoning extreme asepsis, substituting cleanliness and a preparatory vaccination of the patient with a bactericidal serum that will kill all microbes that might probably infect the wounds of their operations. If a man receives a gunshot wound or has a limb crushed in the street, it would certainly be good practice to give that patient an injection of antitetanic serum in anticipation of an infection from the bacillus of tetanus, for no matter how skilfully the operation in this case might have been performed, nor how carefully the antiseptic dressings be applied, tetanic infection would otherwise be possible.

Man at birth is free from bacteria; it is, however, only a few hours after he is born that his skin becomes peopled with a flora of microbes, but it is fully three days before any bacteria can be found in his intestinal cavity. Now, suppose this sterile condition which exists at the moment of his birth could be continued throughout the time of his life, would he be free from all diseases, at least from infectious diseases? This idea has suggested itself to experimenters, and the result of their observations is the only answer I can give. Two guinea-pigs were antiseptically taken from the uterus of the mother. One of the little pigs was nourished upon aseptic food, breathed aseptic air, and slept in an aseptic cage. It managed to live this aseptic life for thirteen days, but at the end of this period succumbed to marasmus and died. The autopsy of this animal proved the care with which this experiment had been performed by demonstrating the complete absence of bacteria. The other animal, surrounded by all the ordinary microbes that are contained in food, water, cages, and air, thrived and grew to maturity. Many series of like experiments have been performed upon guinea-pigs, and no animal has yet lived over sixteen days in an absolutely antiseptic condition. Experiments with tadpoles raised in sterile water, charged with sterile air, and fed upon sterile food has invariably ended in the death of the animal, whereas control tadpoles that have been kept in their normal surroundings have lived and developed. So, then, we are forced to the conclusion that bacteria have their uses, and some of them at least are really essential to the functions of life.

It has even been suggested, and the idea has been put into successful practice, that in stubborn cases of constipation, a disease, by the way, for the relief of which the materia medica offers no satisfactory remedy, to administer cultures of the *coli communis*, a microbe that normally inhabits the intestinal canal and has much to do with intestinal digestion and evacuation. The logic for this line of treatment is that constipation is a condition wherein the *coli communis* is very much diminished in number. In pursuing this course of treatment with cultures of *coli communis* it would perhaps be best to select a rather tame member of this group, for there are certain unmanageable varieties of *coli* that might excite the evacuation of more than one or two stools per day. This variability of properties is peculiar to many microbes, including some of the most harmless.

Inasmuch as we are called upon to admit the uses that bacteria are to the functions of the body, we can bring no greater argument to sustain this fact than the study of the bacteria of the mouth. Although the flora of the gastrointestinal tract is yet incompletely explored, much progress and many interesting facts have been brought to light. Thirty different species of bacteria have been isolated from the mouth. Of this number, nineteen, or almost two-thirds, are normal inhabitants, and, as we shall see in a moment, are essential to the functions of the buccal cavity. The remainder of this list may be classed as rare or accidental microbes that find their way into the mouth. This latter division can again be divided into harmless and pathogenic bacteria, so, when we at last come down to the really mischievous microbes of the mouth, their number is indeed small. Among the nineteen species with which we have to deal we find that five liquefy albumin, ten dissolve fibrin, nine digest gluten, seven ferment glucose, seven coagulate milk, ten digest caseine, nine change lactose into lactic acid, and seven infect cane-sugar, all processes of digestion and preparation of food for assimilation.

Still further than this, it is a well-known fact that wounds in the mouth heal with exceeding rapidity. It seems as though the contents of the mouth, secretions, microbes, or what not, stimulate the healing process. Witness, for example, how dogs lick their sores, cuts, and bruises, and how under this dressing they get well in a remarkably short period of time. I have just read of a passenger in a train who had the end of his finger mashed by shutting the door of his compartment as his train was leaving Genoa, Italy. This wounded man sucked his finger until he reached Geneva, in Switzerland, and the wound healed without further treatment. One of the most fertile and unexplored fields in bacteriology is that of bacterial association, or the influence that one microbe has over another.

Finally, we arrive at that branch of the medical profession which has to deal directly with the buccal cavity,—the dentist. Fortunately for him, his attention need not be turned towards the pathogenic microbes that may infect the mouth, for it is a well-known fact that normal saliva, though permitting the growth of harmless bacteria, is inhibitory for most all the disease-producing microbes, and as the former group is of use, his field of operation becomes very limited.

The mouth presents every facility for the multiplication of bacteria, such as heat, oxygen, moisture, nourishment, absence of light, and secure places to hide. But, upon the other hand, this cavity has a few disadvantages. First, the majority of substances that enter the mouth are sterile because they consist of well-cooked food, and, secondly, the natural defence against invasion and penetration of microbes as exercised by the mucous membrane that lines the mouth.

The mucous membrane of our body that is the most exposed to attacks from microbes is that of the conjunctiva. Our liability for infection of the conjunctiva dates from the second stage of labor to the moment we close our eyes forever. Added to warmth, moisture, oxygen, and nourishment, we have a constant planting of bacteria into the eye from the surrounding air, yet infection is comparatively rare. This immunity is not due to any bactericidal property of the tears, for this secretion exercises no harmful action upon bacteria, but to a purely mechanical process,—that of a constant washing of the mucous membrane of the eye with the lachrymal fluid. This conclusion has been obtained by introducing microbes directly upon the conjunctiva and observing after a short lapse of time their total disappearance from the eye into the nasal cavity. A continuation of this research has developed the interesting fact that a like mechanical defence is exercised in the mouth by the constant washing of that cavity with its own secretions.

The skin dislodges its pastes by a process of exfoliation which might be compared to a sort of dry washing. As to the fate of those microbes that succeed in penetrating through the superficial layers of the skin, but not far enough to become a prey to the ever-watchful phagocyte, their progress is barred by the underlying connective tissue, which immobilizes the invaders and checks their forward movement. Should a microbe be able to gain access into the connective tissue, it immediately provokes a thickening of the fibrinous elements, thus causing a localization of the microbial focus. In the skin this defence is amply illustrated by the slow progress of lupus as compared with tuberculosis of the lungs. Exfoliation and connective tissue resistance are both important factors in the defence of the mouth. The former, together with the washing of the mucous membrane by the secretions of the mouth, as explained above, serve as a constant and mechanical defence against certain microbes, for example, the bacillus of diphtheria, which is fre-

quently found in the mouths of healthy persons. This same bacillus is also prevented from entering into the economy by connective tissue resistance, which by the production of fibrinous elements effectually seals up every port of entrance.

Many of the normal secretions of the body, following the particular diastase they contain, exert a powerful influence over microbes and their toxins. Among the lower order of animals this is illustrated by the intestinal canal of the crawfish and the common round worm that sometimes inhabits the digestive tract of man. Although the crawfish nourishes itself upon putrefying matter, and the round worm lives in and feeds upon a medium swarming with bacteria, yet the intestinal contents of these two animals is almost sterile. One gramme of pepsin from the human stomach will destroy fifty thousand fatal doses of the toxin of tetanus. Ptyaline from the saliva of man when mixed with a rapidly fatal dose of snake venom will render that poison perfectly harmless; *à propos* to this it is a common practice among certain African tribes to treat snake-bites by continually moistening the part with saliva.

But the most important property of the saliva is that of exciting positive chemiotaxis. By chemiotaxis we mean the attraction or repulsion that a microbe exercises towards the phagocytes. A phagocyte does not go directly to or from a microbe, nor does it take up and digest this same microbe without some underlying cause for this process. A certain microbe coming within the sphere of influence of the phagocytes immediately excites an attraction upon those cells and draws them on to its own destruction. Whereas another microbe, which to all outward appearances looks just as attractive and as good to eat, is ignored and scorned by the phagocyte, it is therefore passed by and allowed to continue its mischievous existence. In the former instance we say that the microbe exercised a positive or attractive chemiotaxis, but in the latter the process is reversed, a negative chemiotaxis is excited and the phagocyte repelled. There are several drugs that when added to microbes, or when injected into an animal some hours previous to an inoculation with bacteria, excite a negative chemiotaxis, and the microbe circulates in the system unmolested. Human saliva, however, happily acts as a powerful stimulant to positive chemiotaxis, and encourages the destruction of microbes. By the constant presence in the mouth of this excitant of positive chemiotaxis, a vast army

of phagocytes is always in that region and the consequence is that the mouth is the best-guarded opening of our body. Therefore, should we undertake to wage a war against the normal bacteria of the mouth with a complicated technic of antiseptics, we would certainly do more harm than good.

Then why should the dentist wish to tear out his carpets and furniture, tile the floor, ceiling, and walls of his operating-rooms, bake his instruments until not a vestige of temper remains in them, in fact, imitate his *confrère*, the modern surgeon, and taking care not to omit many of his oversights? The logical response to this is, that all his surroundings and instruments being antiseptic, himself included, the patient has only to do with his own bacteria. There is no chance of a transfer of microbes from the operator to the subject nor from patient to patient. But all this is accomplished with ordinary cleanliness and is the daily routine practice of every dental operator in the country. The danger lurks in two places,—the omnipresent error that resides in a complicated technic and the over-confidence and false assurance in the antiseptic conditions of such surroundings that often lead to indiscretions, which, were it not for the protection that nature has provided, would end in serious results. This over-confidence which leads to carelessness is exactly the same as that which we place in our fire-proof hotels. So this antiseptic professional gentleman accomplishes no more than his carefully clean *confrère*. From the moment an instrument, whether from the autoclave or simple boiling water, touches the mouth of a patient they are upon an equal footing so far as the microbes of that particular individual are concerned. As to the transfer of the cause of a certain disease from the guilty to the innocent by operations in the mouth, grounds upon which many an honorable and careful member of this profession has been called upon to defend himself in the courts of law, it is in the light of recent investigation an utter impossibility, even when the most ordinary care has been observed. What if a microbe or two is imprisoned behind the filling of a tooth-cavity? it can do no harm, being surrounded as it is by a wall of dentine on one side and metal on the other; there, deprived of oxygen and proper nourishment, it must surely die. Then what use does this great parade of asepsis, apparatus, and antiseptic technic serve except as an advertisement or to encourage a microbophobic idea by perhaps a microbmaniac.

SOME PECULIAR CASES OF DENTAL RESORPTION.¹

BY OTTO E. INGLIS, D.D.S., PHILADELPHIA.²

It is a generally accepted fact that resorption of tissue is effected through the agency of cells belonging to the connective-tissue group and commonly called "giant-cells." These are large cells, either mononuclear or multinucleated, found to be capable of excreting a substance which liquefies or detaches small particles of even solid tissues, such as bone or even enamel. The resulting chemical product or particle is either washed away by the lymph-stream or taken into the body of the giant-cell and borne away.

These multinucleated cells are found in granulation-tissue, which in turn is in some form almost invariably found in apposition with surfaces or tissues undergoing resorption. It has been suggested that the solvent excreted is lactic acid, though there seems to be no demonstration of this fact.

Theoretically, acid sodium phosphate would seem to be more likely to be the solvent, as surfaces undergoing resorption are eroded, not decalcified. The writer has endeavored in vain to get an acid reaction with litmus paper touched to the granulations, though numerous efforts have been made. It is quite possible, however, that any acid present may be masked by the general alkaline reaction of the blood plasma, while the giant-cell itself, excreting such an acid against a tissue, may accomplish its physiological object.

Resorption of deciduous roots occurs as a physiological process, while resorption of permanent roots is classed as pathological. There are also records of a few cases of resorption of the crown dentine of permanent teeth, presumably through the agency of giant-cells in the dental pulp.

In all cases it seems possible to refer the resorption to irritation with the production of a mild grade of non-purulent inflammation as a cause. There seems evidence enough to warrant this assumption.

Pus formation retards or prevents resorption presumably

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² Special Lecturer on Dental Pathology and Therapeutics in the Philadelphia Dental College.

through neutralization of the acid product of the giant-cells, the reaction of pus being alkaline. When pus formation is in abeyance, granulations spring up.

In Gaskill's case of dentine resorption¹ by the pulp the vascular alteration in the pulp was shown by the pink color transmitted through the enamel, this being evidence of a condition of advanced hyperæmia or of mild inflammation.

Resorption of cementum and dentine occurs in resorption of deciduous roots, and is produced by the resorbent organ exterior to the tooth. In a certain number of specimens of loose deciduous crowns there may be found after extraction bays of resorption in the dentine of the crown. In a case of extreme excavation the entire dentine of the crown was removed by the resorbent organ, the enamel alone remaining.

In a third case the dentine was largely removed and the tooth perforated upon the mesial side from within by the resorbent organ. A diagnosis of suffusion from hyperæmia had been made, but upon rapid extraction the pulp was found as a large soft mass, but in a vital state within the crown; that is, the erstwhile pulp had become a resorbent organ. All appearance of suffusion disappeared with its removal from the crown concavity, and the tiny mesial opening was discovered. There were no signs of caries whatsoever. This case practically corresponds to that of Gaskill's, but adds the important fact that enamel might readily be resorbed by granulation-tissue from within. That in Gaskill's case is described as crushed in.

In a left lower deciduous lateral incisor, standing labially to the permanent left lower lateral incisor, extraction revealed a hyperæmic condition of the pulp for a length of one-quarter of an inch from the apical end of the root, which was but slightly resorbed. The root end was transparent and the hyperæmia visible as a clearly defined pink streak.

While the pulp may become involved in the resorbent organ and become a part of it, it does not of necessity follow that it does so under all circumstances, as some specimens show a condition the reverse of that previously mentioned. Tomes maintains that resorption of deciduous roots is a vital act not dependent upon the pressure of the advancing permanent tooth.

¹ Proceedings Academy of Stomatology, 1895.

If one observes, however, the numerous examples of resorption occurring at the pressure point, it will seem hard to accept the theory even when resorption does occur without a tooth near by to cause pressure. Deciduous cuspids are notoriously retained late when the permanent cuspid erupts late, or anteriorly or posteriorly to the deciduous tooth. It is true that these deciduous cuspids are often later lost by resorption, but in all probability they have been somewhat affected by resorptive action during the descent of the cuspid. In a mouth recently seen eight deciduous molars were in place at about twenty-one years of age. There was no mechanical impediment to their shedding.

In the resorption of the roots of the permanent teeth aseptic irritation seems to be the proximate cause for all devitalized teeth, and where the pulp is vital it is not always possible to say that irritation is not still the cause. For example, some such teeth are in malocclusion, some in pyorrhoeal conditions, and in others, again, marginal gum resorption or pulp irritation is going on.

The existence of a dyscrasia is also recognized. A patient of mine lost a right lower molar by resorption after arsenic was applied to the pulp. I naturally connected the resulting pericementitis with a possible passage of arsenic through the foramen, and made a record of the case. Since then I have extracted two resorbed supernumerary molars, and have discovered that the lingual root of an upper molar is partly resorbed. The tooth is still in the mouth, but the lingual root has lost the alveolar process upon its lingual aspect by phagedenic pericementitis and resorption, a fact which enabled me to discover the loss of its apical third. The patient is a neurasthenic.

Among the specific recognized causes of resorption in permanent teeth are the following: Chronic abscess (temporarily in abeyance), plantations, protruding root-fillings or broaches, looseness, and pressure. A certain number of cases are due to blows and malocclusion, a few to calculus and pyorrhœa alveolaris.

I have a specimen which shows a curious combination of resorption and calculus formation from a case of prolonged chronic abscess. The resorption doubtless was due to the formation of granulation-tissue during such time as pus formation was absent or not active; or, possibly, the inflammation of the pericementum at a point contiguous to the area of pus formation might account for the resorption.

The frequent occurrence of resorption in connection with chronic abscess of long duration inclines me to believe that the former is the true explanation, especially as I have seen granulations *in situ* after extraction. It is, of course, possible that the pyogenic germs may eventually be shown to have some erosive action. At present such a view cannot be accepted without a demonstration; indeed, Green¹ states that an ivory peg may lie in pus for weeks without visible effect, while it undergoes resorption if aseptically buried in the tissues.

A transient patient from the practice of Professor Eames, of Boston, presented an unusual resorption upon the lingual surfaces of four lower incisors, calculus being the exciting cause. The pulps were not exposed.

Resorptions after plantations are explained upon like grounds of formation of granulation-tissue, bony ankylosis being later brought about by a better tolerance and a constructive activity of bone-cells. The peculiar generally distributed resorption in cases of exfoliation after plantation is evidence of a general pericementitis.

Curious resorptions of roots from about gutta-percha root-fillings, cotton root-fillings, and protruding broaches are quite common.

A root may be perforated from the side to the canal, or even from side to side, by resorptive action. I have a specimen which shows a remarkable case of resorption of permanent roots simulating resorption of deciduous roots and due to the same cause,—viz., pressure of an advancing tooth. The history was that of indefinable neuralgic pain about the third upper molar, necessitating extraction. When removed, the buccal roots being absent, it was thought that a fracture had occurred. An attempt at their removal resulted in the dislodgement of a fourth or supernumerary molar the crown of which exactly fitted the area of resorption at the cervical third of the buccal roots.

Other cases of resorption of permanent roots by advancing crowns of impacted teeth have been discovered by means of the Röntgen ray, and after extraction for relief of pain.

In some cases of impacted teeth even the enamel may suffer marked resorption, as in the case of a cuspid taken from the jaw

¹ Pathology and Morbid Anatomy.

of a lady sixty-five years of age. The tooth slowly erupting was upon one side of the gum and a gold plate upon the other. The resultant tumefaction was natural. Ulceration occurred; the crown came into relation with the oral fluids; granulations formed upon the under surface of the tumefaction, with the result that resorption, but no caries, supervened, or, indeed, may have occurred previously, as it was present and obvious to instrumental diagnosis for months before extraction.

Miller, recently, and Cryer, previously, have noted the condition of enamel resorption.

Another specimen in the writer's possession shows a circumscribed bay-like resorption of enamel and dentine.

The term resorption having been objected to by a prominent friend as not applicable to enamel, it may perhaps be said, in defence of the term, that it seems better than the term "absorption," for though not deposited by mesodermic tissue, enamel is removed in the same manner as tissues of mesoblastic origin, and to be exigent in this matter would be to necessitate the abandonment of use of the word in connection with nerve-tissue as well.

TO RESTORE THE CUTTING OR GRINDING SURFACES OF ABRADED TEETH WITH GOLD.¹

BY DR. F. MILTON SMITH, NEW YORK.

FIRST separate the tooth to be restored from those on either side of it, so that a separation equal to Brown and Sharpe's gauge No. 25 is secured. If only one tooth is to be restored, grind off sufficiently from the cutting edge to accommodate whatever thickness of restoration you desire to make. The tip or restoration should be at least two thicknesses of No. 28 Brown and Sharp's gauge. After grinding down, as mentioned above, bevel the cutting edge very slightly all around, just sufficient to take off the sharp edge.

Drill holes into the cutting edge on either side of the pulp an eighth of an inch deep, more or less, as the case will permit. Usual

¹ Read before The New York Institute of Stomatology, March 4, 1902.

ally cases requiring this work are not very sensitive, owing to recession of the pulp. These holes, for an upper central incisor, should be the diameter of the pin of an ordinary rubber tooth (not the head of it); smaller teeth, pins in proportion.

Take 34 to 36 Brown and Sharpe's gauge, pure gold, and burnish over the surface to be restored, being sure to have it run over the edge slightly, like the cover of a box. This is very important, and for it the separation was made. Ordinarily, a wood point is the best thing with which to adapt the gold to the tooth, the gold being very soft. A wad of bibulous paper pressed down with the wood is of assistance in the beginning. Then press with the wood point all over until a perfect adaptation is secured. When this has been done the dents in the gold show where the holes have been drilled in the tooth. Take a sharp point and pierce the gold for both pins. Take pure platinum wire exactly the size of the drill used. Make the ends small or slightly pointed, and press through the pure gold to the bottom of the hole. Often it is possible, without waxing, to withdraw the pin and gold together. If this can be done, hold under side of the pin with tweezers, apply minutest piece of 22-carat solder to the pin where it passes through the gold, hold over a small Bunsen flame or alcohol lamp and melt the solder. If the hole is no larger than the pin, the solder will not run to the under side.

Now place on tooth and carefully press to place as before with wood point, being very careful that the edges fit perfectly. Put second pin in place and dry gold and pin; then apply brittle wax (made by heating equal parts of beeswax and gum dammar and stirring the same together while hot, then allowing to cool), remove gold carefully, invest, and solder second pin. Replace on tooth, again carefully press to place all over, cut pins off just at height finished piece should be, apply brittle wax as high as pins, carefully remove, paint under side with rouge, and invest.

Have some 22-carat solder rolled very thin, cut size of tip and punch holes for pins. Put a minute quantity of borax on pure gold, drop solder over pins, prepare 22-carat plate same as piece of solder, drop in place, blow broad flame over the piece, and the solder will flow and the 22-carat gold will settle in its bed. Repeat the layers of solder and gold until you have the required height.

Remove investment, and if there is the remotest particle of solder on the under side, throw the piece into your scrap tray and

begin again. If the minutest attention has been given to all the details, it will not be necessary to throw the piece away. Supposing it fits perfectly, take off and finish roughly out of the mouth. It is more pleasant for the patient. Apply dam, mix a small quantity of oxyphosphate the consistency of cream, carry to bottom of holes with a fine smooth broach wound with a particle of cotton, put drop of cement on end of tooth, press tip to its place, and let patient bite it solidly home. Keep it there until the cement is set. Finish at next sitting as perfectly as possible, and you have the strongest and best repair that can be made for the case.

With a little practice the same method can be successfully employed in incisor teeth, when both corners are broken off, necessitating the carrying of a gold filling if one is made from the gum line on the mesial down to and across the cutting edge and up to the gum line on the disto-approximal surface. If the pulp is living in such a case the piece will prove a good one. If dead, with so much of the tooth gone, probably a well-made porcelain crown would be better.

The success of this work depends upon absolute attention to details and perfect fit.

WHICH SHALL IT BE, M.D. OR A.B.?

BY HARRY L. GRANT, D.M.D., PROVIDENCE, R. I.

EVERY man holds up to himself an ideal towards which he works. That ideal may be relatively high or low, depending on the individual moral standard ambition and desires, yet it exists, whether he recognizes it or not. Hence to have any sort of a definition as to what constitutes the "ideal dentist" is out of the question, as there would be about as many definitions as there are individuals.

Considering the difference of opinion as to the final product, it is not strange that opinions differ so widely as to what constitutes the best means to attain the end, the best training for the student to pursue to develop in himself the necessary qualities required of the successful dental practitioner of to-day.

It may be said that nearly all agree upon one point,—namely, that the dental student should receive some general preliminary

education before entering upon this specialty. Among a few that preliminary education is made to include a degree. But here the ways diverge, some claiming that to attain the best results the degree should be such a course as is represented by M.D., and others that it should be such a course as is represented by A.B. or its equivalent.

It is difficult to pass judgment without being biased by one's opportunities or lack of opportunities in life, and it is probable that no two individuals require exactly the same educational training. Those who have been fortunate enough to have the medical and then the dental training look at dentistry from a physician's point of view. It being a branch of medicine to them, places the dentist on the same plane as the oculist, aurist, gynecologist, and so on, and one would hardly think of taking up those branches without first having a full medical course. Had dentistry grown up under the fostering care of the medical school, undoubtedly it would be approached through the same channel as the others, but inasmuch as it has grown by its own efforts, and has assimilated much from the medical, it does seem as if dentistry could not be quite classified beside the other specialties. So marked is the mechanical side that by many in times past it has been regarded as a trade. On the other hand, as the importance of its relation to medicine has grown, it has been regarded by many as purely a department of medicine. While the other specialities require just as skilful manipulation, there is not that daily and constant working with instruments that is necessary in dentistry, under all kinds of conditions, and that, too, on the very hardest tissues of the body. There is not that daily work in the laboratory the ability to perform which is supposed to be possessed by every dentist. We have, in marked contrast, the trade and the profession, the expert mechanical worker and the intellectual diagnostician.

If one is to be an oral surgeon, a stomatologist in the full meaning of the word, a more general medical training is undoubtedly beneficial, and even then would it not be better if the medical came after the dental training? Why? Because the average medical practitioner looks upon dentistry as a specialty which can be taken up readily without much daily manipulation of instruments, so long as one knows what ought to be done; whereas, the one who takes up dentistry as such first devotes many hours daily to the training of one's fingers. In other words, the physician is apt to

exaggerate the medical without due attention to the mechanical, whereas the student is more apt to bestow his special attention to the mechanical side when his manipulative skill is most plastic.

For every gain there is a loss, for every loss a gain; whatever course a student takes he gains something he would not had he taken other, and also loses something he would not had he pursued some other. The student who takes a medical course after having had the slight preliminary training required to enter many medical schools should gain much in time and medical knowledge over him who takes an A.B. or its equivalent. Indeed, whatever course a man pursues he uses to some extent all the knowledge he ever acquires, however remote it may seem from the work in hand. The M.D. in dentistry applies his medical knowledge and undoubtedly gains much thereby.

The A.B. in dentistry applies his previous training in many ways. So apparent are the many benefits, that it is hardly necessary to mention those which accrue to the dental student who has had a medical training. He is a physician. He can diagnose any of the better-known diseases. He is proficient in auscultation and percussion. He feels perhaps as competent to perform an appendix operation as to extract a tooth. He has a foundation of medical knowledge which the average dentist has not. But a great deal of his medical acquirements will not be in daily use, and, like all knowledge which is not in constant use, the unused medical training will soon find its way to the top shelves of the mind, there to become covered with dust and soon a back number.

Knowledge is not all, medical knowledge is not all, that is needed to raise the dental profession as it is to-day to that ideal position in which we would like to place it to-morrow. Of what, then, is the profession in great need? Of cultured, broad-minded, studious men, who have the foundation and the will to work unselfishly for the advancement of the profession from the date of their entrance into it until their death. There have been and there are many such men in the dental profession. There is room for, and there is need of, many more such men.

The type of man who goes to college differs in a very general way from the type of man who omits the college course and goes directly into a profession or business. The physician who has served as interne in one of our best hospitals differs from the physician who steps directly from the medical school to a private practice.

Reason is an attribute of experience, as energy is of matter. The man of broad experience has greater resources upon which to draw in life's work than the same man could have with a very limited experience. Within the college course is crowded a world of objective impressions at a time when the mind is most easily impressed. These serve as a very firm foundation upon which the individual builds his life-work. There will always be professional schools which do not require much preliminary education. Why not make a special effort to have a few in dentistry which will especially attract the college man?

The professional school is primarily for the trained mind, for the mind which is endowed with or has acquired the power of concentration, of continuous thoughtful application, of adaptation, of assimilation, and for the mind which has many other attributes which in the average man are developed in a regular college course. President Faunce, of Brown, has said, "There are two objects in education,—one is the training for power, the second is training for vocation. The first has been followed in colleges for generations back. I myself tell my students to follow useless studies for useful purposes. They are summed up as giving power without regard to what the boy or girl is to do in the world."

Books alone will never train fingers and develop mechanical skill. It is the doing of the thing with thoughtful intelligence back of it that brings about manual dexterity. Inclination and some intuitive mechanical ability are essential, and the mind with these attributes will become a more useful member in society if the education previous to taking up the profession has been broad and *not necessarily purely practical*.

The methods of instruction in the professional school and those in college are so entirely and essentially different that one can readily see why the average individual does not get the same mental training in the one as in the other. The college is the link in the chain which connects the boy with the man. For four years he is associated intimately with those who are to follow various pursuits. Some of his associates excel in the various departments,—some in mathematics, some in languages, some in history, some in literature, some in mechanics, and so on. By these very associations his mind is broadened so that he has a better view of life; by them he is stimulated to develop the different departments of mind just as the athlete develops the different muscles of the body. It is the daily

application of the mind which brings about the difference between the real student and the mind-wanderer. Probably two-thirds of those who enter college have no more than a vague idea as to their life-work. A few have marked tendencies in some one direction. Others are groping to find in themselves that for which they are best fitted. Before long a kind of intuition will direct the one who is in earnest in studying his own fitness and desires. When that is once settled he elects readily such subjects as have a bearing upon his life-work, not, however, to the exclusion of other subjects which help to make a well-rounded mind. He does not become one-sided, as he might in a purely professional course. The student who so elects in a well-equipped college can have four years of comparative anatomy and physiology, in which is included dissecting and other manipulative work, several courses in chemistry, physics, botany, histology, geology, and so on, but not to the exclusion of mathematics, languages, philosophy, English, history, and literature. And furthermore he will have a daily recitation and training of mind such as he cannot have in a professional school, simply because the professional school is a special means to a special end, and cannot devote the time directly to the training for mental power.

There is no attempt intended to claim that all college men have better-trained minds than all non-college men. All educated men *do not come from college*. They may not need the training as they may acquire it in other ways. However, many educated men do come from college, and do occupy positions which they could not without having had such opportunities. It may be years before the real benefits of college training are manifest, but sooner or later the one who has had that privilege will feel that he has a solid foundation upon which to build the superstructure, his special work in life.

Culture, the taking of the raw material and developing it to its fullest capacity, and refinement, the separating out of the undesirable qualities and reducing the desirable to the finest possible texture, as applied to the mind are difficult terms to define, and yet every man realizes and feels the difference between the possession of them and the total lack of them. When the average dentist is cultured and refined in the sense which we all know and feel, there need be no fear that he will not be recognized to be on an equal footing as a professional man with his brother physician, lawyer, clergyman, or college professor. When the average dentist

is cultured and refined, there will be less tendency towards a spirit of commercialism, a spirit of petty jealousy, a want of high ethical and moral standing.

There is a thought expressed in a number of *Success* which has a bearing on this subject, and if we may we will quote it here: "We neglect, at our peril, the brain or the muscles alike. A monstrosity is not a man. To cut off the physical, the moral, or the spiritual branches of the tree of life, or to let them die by withholding their natural nourishment, or to allow one's being to develop a large, one-sided brain-gland by pursuing some mental specialty at the expense of everything else, may produce one who will stand high as a specialist, but will never produce a *man*."

Are not we as a profession in greater need of the *man* well developed in every particular, rather than of the dentist more highly specialized? By which course can it be best attained?

INCONSISTENT AND MISLEADING EXPRESSIONS.

BY B. F. ARRINGTON, GOLDSBORO, N. C.

SOME men of prominent distinction in the dental profession sometimes give utterance to expressions pertaining to theory and to practical matters in dental practice that are very inconsistent, entirely out of line of all reason, and hurtfully misleading, especially with that class of dentists who accept statements and teaching from what they regard high sources, without ever questioning whether they practically be reasonable or unreasonable, true or false. There are such dentists, many of them.

We are all liable to be misled, and are liable to err in our practice and in statements concerning practice, but some err to injury to a greater extent than others. The more prominent and professionally conspicuous the man or men making unreasonable and inconsistent statements, such as will not admit of favorable sanction when put to the test, the more hurtful and the greater the injury done, therefore the necessity and demand for thoughtful consideration and careful investigation of all seemingly extreme, unreasonable, and impractical statements emanating from such sources. It is the impractical in practice that retards true progress.

We will for the present refer to but one subject for consideration, and will be brief in pointing to some statements made by a distinguished member of the profession concerning the manipulation of amalgam and the results. Dr. Black is too favorably established in the esteem and confidence of the profession to be unfavorably affected by just and fair criticism, consequently I do not hesitate to criticise as cause justifies, that some of the profession, if not profited, may be induced to pause and reflect before too readily accepting as correct and valid theory and practice that cannot and will not hold good when subjected to legitimate tests. He is quoted prominently in dental journals, and is at present generally regarded, possibly, as our highest authority pertaining to dental alloy and amalgam practice. As reported in one journal, he said to a dozen dentists, "Make the fillings from the same bottle of alloy just as you please, use much mercury or little mercury, knead it much or little as you think proper; use much or little pressure in packing the filling as you please, so you use such as would be used in the mouth; simply, I do not expect you to put seven or eight hundred pounds on it in packing. Now, every one of that dozen fillings will shrink or expand practically alike." In another journal he says, "I should expect that severe grinding amalgam in a wedgewood or roughened glass mortar would considerably increase the contraction." He says he "uses steady, down pressure, and fills with flat surface, serrated pluggers, using comparatively light pressure." In another journal we find him saying, "We need more pressure in condensing amalgam than in condensing gold." He also says, "When the minimum pressure for condensing gold is fifteen pounds he wants twenty pounds for amalgam."

Here are statements seemingly inconsistent, and are unquestionably misleading. Strictly accepting and following such inconsistent and unreasonable theory and practice, who could be expected to fill creditably and give satisfaction in the use of amalgam?

Such teaching and practice, should it become general, would preclude the possibility of best results in the use of amalgam.

Progressive practice up to date, on a reasonable and sound basis, is what we want and must have. If in our efforts so far to accomplish desired results we have failed, we must persevere until success is accomplished.

In teaching, a consistent, practical line of practice pertaining

to use of material for the preservation of teeth is to be respected and followed for success and a guarantee of satisfactory results.

To teach theory and practice that is not in conformity with sound judgment and common-sense reasoning, and will not stand fair tests, is unreliable and hurtful in results, especially so in our treatment and care of the natural teeth.

For true advancement and the accomplishment of work that will stand proper tests and prove theory and practice correct, we must, when we realize that we have erred, amend our teaching and practice, and work energetically and faithfully to get on line and in line, if possible, of correct theory and conservative, practical practice, for that line alone is reliable and will stand the test of time, and securely hold the stamp of truth. Our period for life-work is too limited to admit of retracing, undoing, and redoing, if to be avoided.

Reviews of Dental Literature.

THE PRESENT STATE OF OUR KNOWLEDGE IN REGARD TO THE SENSITIVENESS OF DENTINE, AND ITS TREATMENT. By Professor Dr. Walkhoff, Munich.¹

In discussing the cause for the sensitiveness of dentine the author declares emphatically against the presence of nerve-fibres in the tubuli of the dentine. He spends considerable space in refuting the views of Morgenstern, who claims to have found nerve-branches in the contents of the tubuli. He agrees with Gysi in that the latter denies the presence of nerve-branches in the tubuli, but disagrees with him in his explanation of the way in which dentine becomes sensitive, Gysi's view being that the contents of the tubuli being semifluid, a pressure or pull upon the contents of the tubuli was immediately transmitted to the odontoblastic cells, and they in turn acted upon the nerve-fibres which surrounded the cells.

¹Der augenblickliche Stand der Kenntniss und der Behandlung des sensiblen Dentins, von Hofzahnarzt Prof. Dr. Walkhoff. München. Deutsche Monatsschrift für Zahnheilkunde, 17. Januar, 1902.

Gysi's theory can be called the hydrostatic theory, and does not grant the contents of the tubuli any further share in the establishment of sensitiveness in dentine except as the contents of the tubuli act as confined columns of water and transmit impressions to the odontoblastic cells. The author's views upon this subject can best be understood by the translation of a few sentences. "My view is that we must consider the odontoblastic cell and its projection into the dentinal tubule as physiologically one. . . . The projections into the dentinal tubules are an integral part of those cells which by projections are related to other cells of the pulp. These cells are surrounded by numerous actual nerve-fibres, which in some cases enter between the odontoblasts." "The zeal with which the presence of nerve-fibres in dentine is sought for by many observers is due to the old idea that the condition called irritability is limited to the nerves of an organism. Physiology has long ago overthrown such a view. Irritability, as Verworn has said, is a common peculiarity possessed by all living substance. The tissues of animals which possess no nervous system, and, further, all plant tissue, and even all isolated one-celled organisms react in an outspoken and clear way to all irritation which is brought to bear upon them."

From these considerations the author argues that the contents of the dentinal tubules are capable of receiving an impulse or an irritation and transmitting it to the odontoblastic cells of which they are merely projections, and that the odontoblastic cells are capable of sending on the impulse to the nerve-fibres which immediately surround the cells. And all this is accomplished not by the presence of nerve-fibres in the tubuli, but by the power which all protoplasm has of reacting to an outside stimulus.

The author next considers the clinical diagnosis between normal and hypersensitive dentine. His method is to force by means of a syringe ten or twelve drops of water of a given temperature into a cavity and note the reaction of the dentine. According to his experiments normal dentine reacts at a temperature of 15° to 18° C. That is, a distinct sensation is experienced when water of this temperature is introduced into a cavity. The dentine which reacts at a temperature of 18° to 23° C. is hypersensitive. In this way we have a sure objective means of distinguishing between a purely local affection of the odontoblasts and their projections into the dentinal tubules, and affections of the pulp, especially the acute form of inflammation. An acute inflammation of the pulp reacts

powerfully and continuously at a temperature of 23° to 28° C. A pure hyperæsthesia or a normal dentine does not commonly react at this temperature. As to the practical handling of sensitive dentine, it can be accomplished either by a total anæsthesia of the tooth, or by a local anæsthesia of the ends of the fibrils. The general anæsthesia is best accomplished by the application of cold produced by chloride of ethyl. Care should be taken not to apply the cold where there is an inflamed pulp, as great pain will be produced. But it can be applied very successfully in cases of sensitive dentine and in slight grades of hyperæsthesia which react up to 22° C., as described above. If used in cavities which react to a temperature above 22° C., it is a great mistake.

Where cold cannot be used, resort must be had to other means affecting a more local area. Of these the author mentions cocaine and chinose. The latter drug acts by favoring the diffusion of the cocaine. A stream of warm carbonic acid gas is also recommended. Carbonic acid gas is said to lower the vitality of tissues with which it comes in contact and to make them less capable of transmitting irritations. The author's latest method is to produce carbonic acid gas in the cavity in a nascent condition, and use in combination some alkaloid, preferably cocainum nitricum.

WILLIAM H. POTTER.

PYORRHOEA ALVEOLARIS—PROGRESS REPORT. By Kenneth W. Goadby, D.P.H. (Camb.), L.R.C.P., M.R.C.S., L.D.S. (Eng.).¹

IN a preliminary report made to the Committee, I have stated that the cultural examination had been undertaken in a number of cases and that the organisms obtained had been subcultured on various media, to determine if possible which, if any, of the organisms present were invariably found in all cases; by these means a number of well-known organisms, mostly belonging to the common saprophytes, were found, among them the *B. mesentericus ruber* and *vulgatus*. Many members of the yeast family are also found. A culture of one of these isolated from one case produced death when injected into the peritoneal cavity of a guinea-pig, the yeasts were recovered from the peritoneal cavity, but were not present in the blood.

I have, moreover, often found yeasts in the small masses of

¹ Abstract of a paper read before the Odontological Society of Great Britain, April, 1902.

tissue adhering to the apices of teeth extracted in pyorrhœa cases, but as yet these have not been inoculated into animals. Culturally, they appear to correspond to the ones found in the so-called chronic abscesses.

This fact is perhaps interesting when we recall the number of pathogenic members of the Blastomycetes that have come to light in recent years.

Miller, I believe, has described a pathogenic yeast present on one occasion in the mouth, but I have not been able to find its description.

Klein has described a yeast isolated from milk, which produced a general tissue change with the formation of new growths in various parts of the body when inoculated into animals; all of these tumors were filled with yeasts in various stages of growth.

Grasset has also described a pathogenic yeast present in an abscess of the mouth.

Troisier and Achlaime have also described a yeast, pathogenic for guinea-pigs, obtained from the membrane upon the throat of a patient suffering from enteric fever. Fullerton has investigated pathogenic Blastomycetes and describes several varieties, among them *Saccharomyces tumefaciens albus* which produces tumor formation when injected into animals. The organism described by Grasset appears to be a similar organism to the one I have obtained. It was pathogenic when injected subcutaneously into guinea-pigs. I have frequently met with yeasts of various sorts in the marginal ulceration in children, and in two cases of pyorrhœa in women associated with chronic gastritis and extreme attacks of vomiting. The pathogenicity of these species was not tested.

I have noticed that among the débris from the pus of some of the cases in which these yeasts were shown to be present, there were some large and irregular threads and bacilli which gave the granulose reaction and that in some of the cultures of these yeasts there were present threads and elements of mycelial formation which appeared suggestive of the bacillary forms seen in the specimens stained direct. It is impossible to make any definite statement upon this point at present. The direct examination of the pus furnishes some important points, among which may be mentioned the difference seen in the species of bacteria morphologically represented in early and late cases. It is rare to find many cocci

present in the later stages, and the field is, as a rule, occupied by bacilli of various kinds and a good number of threads; among the threads many show a tendency to stain irregularly and in patches, a characteristic that is sometimes met with in the cultivations.

Although cocci are rarely met with in the coverslip direct, they constantly appear if broth cultivations are made from the pus, and among the cocci present the common mouth streptococcus appears with great regularity. Even when the cultivations are made on solid media there is a good deal of difficulty in getting all the organisms seen on the coverslip direct to grow. It does not follow that they cannot be cultivated, but what appears to be the case is that in the mass of organisms are some more or less antagonistic which prevent the growth of each other, probably explaining the curious inconsistency of the species obtained, sometimes the one and sometimes the other organism being able to develop. This, of course, very much complicates the problem, and in addition there are a large number of common saprophytic bacteria of the air that frequently find a lodgement in the mouth. In the cases examined it appears that certain bacteria are generally present and that the others are purely adventitious species, but that of the organisms which are generally present, so far as coverslip indications go, certain ones are very much influenced by the other bacteria developing upon the culture media, so that in some cases they may not grow at all, while in others they are obtained. So far I have been unable to devise a means by which these more exotic bacteria can be always isolated, although I have obtained some of them in pure culture at various times.

By a long process of exclusion certain species have been, I think, excluded from causal relation to pyorrhœa, others appear to be related. One organism, a coccus not hitherto described, may perhaps be mentioned, as it is often present in the pus of dento-alveolar abscesses, where it occurs with tolerable frequency, and appears to have some relation to the curious thick viscid pus one finds in some pyorrhœa cases. This coccus is also found in the pulps of dead teeth associated with abscesses, and especially in acute oral suppuration. It produces a marked stringy viscous growth upon solid media and is extremely difficult to remove from the agar slant. The broth cultures also form stringy viscous growths which at times adhere to the sides of the tube in the form of a cloud of colonies, about 0.5 millimetre in diameter, that are strongly at-

tached to the glass; particularly does this occur in media containing nitrate. This organism will be referred to at a later date.

I have already mentioned the difficulty that there is in obtaining cultivations of all the bacteria that are to be seen on the cover-slip preparations, and it was therefore thought that some additional light on the bacteria of pyorrhœa might be obtained by the direct inoculation of animals with the pus obtained from the pockets.

There is considerable difficulty in obtaining sufficient material from a given case to perform the experiment. Eventually the following method was adopted: After previously wiping the gums with a piece of sterile wool moistened with sterile water, the pockets were cleared out with a sterile instrument and the material obtained mixed up in sterile broth in the form of an emulsion. The emulsion was inoculated into guinea-pigs and in four instances into rabbits. The inoculations were both intraperitoneal and subcutaneous. Dr. Eyre very kindly performed the inoculations for me. The result of these inoculation experiments has given some additional light on the bacteria of pyorrhœa and incidentally on the question of oral sepsis.

Twenty-three animals in all were inoculated, of these nineteen died, some within eighteen hours; the remaining four recovered, but of these two showed local abscess at the site of inoculation, with fluctuation, which cleared up. Several of the animals which succumbed also showed a local abscess which did not burst through the skin, but was gradually absorbed. One guinea-pig showed a local necrosis of the skin. At three of the post-mortem examinations no organisms at all were obtained from the tissues.

In one of the cases the local abscess was incised before death, and the contents showed microscopically the organisms that had been noted on the cover-slip; there was a good development on broth and a considerable amount of smell evolved. Plate cultures only gave the mouth streptococcus. In no case were staphylococcus aureus and staphylococcus albus present in the blood or in the tissues and kidney; there was no interstitial abscess formation such as noted by Galippe. The staphylococcus noted above was obtained once from a local abscess at the seat of inoculation, and in one case a streptococcus was obtained from the heart blood. In four cases a streptobacillus tending to form rather long threads of unjointed bacilli was isolated.

The organism in each case seemed to be identical, cultivated on

various media it conformed to a general type. The pure cultivations were injected subcutaneously in three guinea-pigs with a positive result. From none of the animals inoculated was the pneumococcus obtained from the heart blood, and no capsuled cocci were observed in the blood. This last is perhaps of interest, as the pneumococcus is frequently present in the saliva, as has been pointed out by Washbourn and Eyre. Kirk has also described a coccus which he thought resembled the pneumococcus as occurring in the abscesses attached to living teeth, and suggested that the infection had arisen from the organisms gaining access through the mucous glands. Kirk, however, does not consider his evidence conclusive.

Bacillus coli was not obtained from any of the post-mortem examinations on the animals inoculated.

These results are too fragmentary to allow a deduction to be made at present, and only serve to illustrate the complicated nature of the problem; at the same time they in no way tend to show that pyorrhœa is a condition generally referable to infection with the common pus cocci. I must say that at first I was inclined to look on the matter rather from this point of view, but the results of my experiments tend to negative that assumption. It may be that the mouth streptococci were in some way accountable for the animals' deaths, as it is well known that the injection of certain organisms tend to promote the pathological effects of other organisms with which they are injected. Thus, for instance, the virulence of attenuated diphtheria bacilli may be increased if injected into an animal together with the streptococcus pyogenes, an attenuated streptococcus pyogenes by injection with the bacillus coli, an attenuated bacillus of malignant œdema by injection with a culture of bacillus prodigiosus, and so on with very many other bacteria. What may have happened, therefore, is that the cocci which often appear on the culture media and do not appear in the post-mortem examinations have so far assisted the pathogenic effect of the other organisms that what would be a non-fatal dose has proved to be a lethal quantity. The cocci to which I refer are the streptococci of the mouth which appear in almost every culture, and which have been obtained from the site of inoculation in certain cases. That some such interaction and symbiosis does take place is probable, but at the same time I think that there is another explanation to be offered of the pathogenic effect of pus.

In several of the inoculations performed there was no fatal issue, although the cases in no way differed from the ones that gave the positive result, and in several of the inoculations the animal did not die for a considerable time; moreover, in four of the fatal cases no organisms whatever were found in the blood or in the tissues; there was no abscess formation; at the site of inoculation there was at first a slight local reaction, which entirely cleared up before the animal's death. Examination of the kidney showed no abscesses, and one animal which did not die was killed, and the kidneys examined and found to be entirely normal, and to show no evidence of the abscess formation which is generally associated with the injection of pus cocci (staphylococci). It therefore occurred to me that the organisms concerned in the process might be of the toxine-forming species, and the following experiment goes some way to show that such a probability is possible. A broth culture from a pyorrhoea case in which gastric trouble had been in evidence for some time was filtered through a Pasteur-Chamberland filter after seven days' incubation at 37.5° C. The filtrate was inoculated into a guinea-pig weighing six hundred and twenty grammes, the amount injected being 4.5 cubic centimetres,—that is, less than one cubic centimetre per one hundred grammes body weight of guinea-pig. The animal died in forty-eight hours.

Cultivations made at the post-mortem examination from the blood and organs gave negative results. There was a gelatinous exudation at the site of inoculation, and the suprarenal capsules were decidedly hemorrhagic. The rest of the organs were normal. Another filtered culture gave a similar result.

Unfortunately, two experiments are not enough to more than point to a probable existence of toxine, but it is at the same time a point of not a little interest, and the following case strongly confirms the supposition of toxine formation by mouth bacteria.

The patient, an insurance agent, consulted his medical adviser (Dr. P. M. Macgregor) complaining of weakness and deep-seated pain in the muscles of his legs and thighs. He had difficulty in walking, but no lightning pains or definite ataxia. He could not sleep, and suffered from severe mental depression. He complained of no gastric symptoms beyond a distaste for food, although his mouth was in an extremely septic condition. He had increased knee-jerks and patches of hyperæsthesia on the feet. The thigh muscles were tender on deep pressure, but there was no pain along

the nerve-trunks. There were no thermal changes and no trophic disturbance. There were no eye changes.

There was considerable loss of power to grasp and loss of power in the lower extremities. He was treated for neurasthenia and told to have his mouth attended to, but for some little time refused to have dental attention. Eventually, as he was becoming no better, he consented to submit to dental treatment and consulted me.

There was excessive pyorrhœa with much pus and considerable destruction of the alveolus. The other symptoms were well marked. The affected teeth were removed and mouth lotions prescribed. Improvement immediately set in, the loss of power slowly returning, and within six weeks he was practically well, having lost the chief nerve symptoms, although his grasp was still weak.

In attempting a summary of my investigations the large number of conflicting facts makes the task by no means a light one, and the conclusions may be said to be largely negative, but at the same time there is, perhaps, some additional light on oral sepsis.

It appears highly improbable that the ordinary pus organisms, such as the staphylococci, bacillus pyocyaneus, bacillus coli, etc., have any direct share in the production of pyorrhœa alveolaris.

The absence of the pneumococcus in any of the inoculated animals is also of some interest.

The occurrence of members of the blastomycetes, in both the pus and in the tissues surrounding the roots of pyorrhœa teeth, is instructive and certainly merits further investigation.

Although it is impossible in the present stage of the research to make a definite statement, there appears little doubt that the organisms, whatever they may be, concerned in the process are pathogenic for animals when injected from the gum margin, and that the progress of the disease would appear to be more nearly related to a toxic condition than to the ordinary condition of suppuration.

The relation of pyorrhœa to general toxic conditions and septic gastritis, as pointed out by Hunter, certainly receives confirmation, and the fact of the inoculation of the filtered broth cultivations producing pathogenic effects, points to the presence of toxins that may have much importance in disease.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the office of Dr. W. E. Hoag, 8 East Forty-third Street, New York, on March 4, 1902, the President, Dr. Howe, in the chair.

The minutes of the last meeting were read and approved. The chairman announced that a paper by Dr. F. Milton Smith, on the subject of preparing gold tips for teeth would be substituted for the paper which was to have been presented on replacing broken porcelains on bridge-work, etc.

Dr. Smith.—What I have to present can hardly be dignified by the name of a paper. It is simply a detailed description of this process and was prepared in compliance with a request of the editor of the INTERNATIONAL DENTAL JOURNAL for short papers of a practical nature.

(For Dr. Smith's paper, see page 483.)

DISCUSSION.

Dr. G. A. Wilson.—I wish to state that six or eight weeks ago Dr. Smith put two such tips on my front teeth. I have had considerable experience, and I have found them to be satisfactory pieces of work. I have had one or two cases in the last two or three years, and I would like to add one or two suggestions. Instead of pure gold as a starter, I use gold with two per cent. of platinum. It sets down better than pure gold, and instead of two pins I use three. Like three legs to a stool, it holds the tip in place better even if one pin is very shallow. Instead of pure platinum for a pin, I use platinum-iridium wire, which is much stiffer and can be used much smaller.

Dr. I. F. Wardwell.—When the platinum pin was spoken of I remembered that Dr. Smith described that method to me over two years ago, and I was very glad to make use of what he had told me. I find the platinum-iridium pin to be a great deal smaller and stiffer. I can indorse this kind of work.

Dr. Chas. O. Kimball.—In the case of a canine tooth worn down, involving a large filling on the side, as well as the grinding surface, the gentleman having a very heavy bite, in addition to the two pins I placed a third pin up on the side of the tooth at the bottom of the lateral cavity. I cut the hole so the pin would slide up from below, so preventing the filling from spreading out. If the cavity had extended on both sides this would not have been necessary. It worked admirably.

Dr. F. Milton Smith.—I want to disclaim any originality for this method. To Dr. Dwight Smith I am as much indebted as to any other, unless it be to Dr. Littig. But in order that those who are not familiar with this work may know the details I prepared this paper.

Dr. Justin de Lisle presented a paper entitled "Some Popular Errors about Microbes."

(For Dr. de Lisle's paper, see page 469.)

DISCUSSION.

Dr. S. A. Hopkins.—I cannot let this opportunity go by without saying a word. When I heard that Dr. de Lisle was going to read a paper I happened to be in the Bacteriological Laboratory of the Harvard Medical School. I called Dr. Ernst's attention to the notice I had received, and by way of coincidence he picked up a manuscript with Dr. de Lisle's name upon it, which he said was for publication in the *Journal of Medical Research*. I felt that anybody who was a contributor to the *Journal of Medical Research* was worth listening to, and I have been very much interested and am very glad that I came on. However, I do not altogether agree with the conclusions of the essayist. In the first place, antitoxins, with the exception of the antitoxin for diphtheria, are not, as a rule, sufficiently certain in their results to be trifled with. I do not think any physician would be justified in injecting the antitoxin of tetanus because a patient had received a slight wound and there was a very remote possibility of the tetanus bacillus entering that wound. As to the bacteria of the mouth, it is pretty difficult to say how many there are. Of course, nearly every form of bacteria gets into the mouth at one time or another. I have isolated over forty different varieties which I have found in the mouth, but I should say that comparatively few, certainly not more than quarter of that number, would be looked upon as mouth bacteria only.

As to the action of saliva in exciting the phagocytes to action, I think, from the result of a few experiments that I have made, that sterilized saliva has very little power to stimulate the production of these protecting phagocytes. Unsterilized saliva, however, does not seem to produce this action, which would lead one to believe that it might be not the saliva itself, but some organism in the saliva, which brought about this action. In regard to the sterilization of instruments I have only this to say: It is, of course, impossible to work under strictly aseptic conditions in the mouth, because the mouth itself teems with bacteria, but I think every patient who comes into the office of any dentist is entitled to protection from the patient who has been operated on before him, and I do not think any suggestion of carelessness such as has been intimated in the essay that we have listened to should be entertained for a moment.

Dr. H. W. Gillett.—I have been exceedingly interested in the point of view Dr. de Lisle has taken, but there are certain points that appeal to me from the stand-point of a practitioner. Dr. de Lisle's statements have dealt with the assumption that the operative dentist has only to do with the hard dentine. Practically it is something very different, and I should be very careful to protect my patient from the one who has preceded him where pulpless teeth with open foramina and gum-tissue are concerned.

Dr. R. H. M. Dawbarn.—I hope the Lord will give me the power, Mr. President, to sit down within the course of the next five or ten minutes, because enough points have been raised that deserve discussion to keep me busy for the next week. In the first place I wish to say to you all how much I esteem Dr. de Lisle personally, and when I am through I hope he will still shake me by the hand. I have never in my life seen a more striking instance of the danger of a theoretical man trespassing upon practical grounds. Here is a man who spends his life in the laboratory, not seeing disease at all, and draws conclusions from a laboratory study which are absolutely dangerous to human life.

If his statements had reference to the extremes of general surgeons as to *antisepsis*, as regards its being overdone, I would not take issue with him; but he is absolutely wrong if he thinks surgeons, whose business it is to teach, are in the least doubt about the wisdom of absolute *asepsis* before surgical operations. *Asepsis* simply means surgical cleanliness, and there will never be a point

upon which surgeons are more in unison than upon this. It is impossible to sterilize the skin as it should be done in a few minutes' time, and it is a fact that if you scrape the hands you stir up some of the deeper layers of microbes, and one should avoid this. For this reason, and in order to avoid microbes of all kinds, the majority of surgeons now use boiled rubber gloves, first, however, making the hands as aseptic as possible, to avoid infecting the wound if a glove be torn or cut during the operation. Rubber gloves have come to stay; they have logic on their side; and it behooves the minority to defend themselves and not the majority.

Early in Dr. de Lisle's address he said in effect that a great many surgeons are contemplating using tetanic serum as a preventive measure. I do not know of a surgeon in the New York Surgical Society who has the least idea of doing so. I for one should consider it reckless. There is in prevention of tetanus a better means and a much simpler one. You all know that the bacillus tetani is anaërobic; it cannot multiply in the presence of oxygen; and consequently it can be prevented from multiplying by exposing the infected surfaces to free access of air by drainage-tubes or free use of gauze drains. He mentions that surgeons contemplate the injecting of the serums of the different microbes before an operation, in order to do away with all this antisepsis. The trouble is that in most cases we have a very mixed infection, and we can never be sure which ones among many microbes there will be, and consequently we do not know what serum to inject. I do not believe this theory ever emanated from the mind of a practical surgeon.

Regarding intestinal microbes, there is not any question but that they are beneficial, breaking up the substances in the alimentary canal and assisting assimilation and elimination. In regard to the animals fed upon perfectly sterile food and breathing sterile air, they undoubtedly died from this cause. No doubt some microbes do have the power of helping us in certain ways. Most of the microbes in the alimentary canal are such as live upon dead animal tissue and are not of the variety that attack living animal tissue.

Regarding lupus and its slow development in the skin, I do not think the doctor has put his finger upon the true cause why tuberculosis does not go on as rapidly in the skin as tubercular processes more deeply placed. It is because, of all the pathogenic bacteria, that of tuberculosis is the one most easily affected by even slight

changes in temperature; and in the skin the temperature is enough cooler than that within the lungs, for example, to retard the growth of tubercle bacilli. For this reason, in the treatment of tuberculosis of the lungs, ice-bags externally, or, upon the other hand, breathing extremely hot air, have been sometimes used. It was not much of a success, however.

Regarding chemiotaxis, I have no doubt but later some medicinal substance will be found to increase it for the benefit of humanity.

The speaker alluded to the baking of instruments. Surgeons do not bake their instruments, they boil them. I do not think that in a thousand years from now we will have improved our method of sterilizing instruments, because it is perfect. In five minutes they can be thoroughly sterilized, and without expense, in boiling water with one to five per cent. of washing (not baking) soda added, to prevent rusting. I am informed by an eminent metallurgical chemist, Mr. Le Boutillier, that it is a mistake to suppose that a temperature of 212° F. can in any way injure the temper of steel. Since that time I have always boiled all my instruments together, first wrapping the knife blades in a little gauze to prevent accidental dulling by contact with other tools.

I was particularly sorry at the intimation that we should not use the utmost care in sterilizing the instruments used in dentistry. There is too little care used, as a rule, even at the present time. My colleague, Dr. Wyeth, president of the American Medical Association, remarked to me some months ago that he was almost afraid to go to a dentist because he did not know whom he could trust in the matter of cleansing instruments. I hastened to assure him that I knew of a number of excellent dentists who were very careful about sterilizing their instruments.

I wonder how many of you gentlemen realize the large proportion of syphilis there is in the community. Your patients and my patients will commonly simply lie to us with regard to it if, having it, they are asked. Human nature is much the same here as in Paris. One man in ten in the public hospitals there is syphilitic, to quote Dr. Prince A. Morrow. Of course, this percentage is not so large in the better portion of the community, but, notwithstanding, it is so high that the greatest care needs to be taken to avoid carrying the infection from one patient to another. Dr. de Lisle has stated that the interval of a few minutes which must elapse in

carrying the infection from one person to another is sufficient to destroy the poison; but I think none of us would upon our own persons dare risk infection from instruments used even days before upon a known syphilitic unless these tools had been sterilized in the interval. The admitted fact that none of us knows of an instance of syphilis conveyed by dental instruments proves nothing at all. Nothing could be more nearly impossible to prove; and yet syphilis from use of forks, spoons, and drinking-vessels in common is far from rare; hence I am forced to believe that it is at times conveyed by carelessly cleansed dental implements.

In conclusion, I think, gentlemen, that we who are teachers, and I am sure Dr. de Lisle properly classes himself in that category, should be extremely careful not to convey anything which can be taken as an excuse for relaxing aseptic measures, even jokingly. I am reminded of the advice of the old orthodox preacher to the young minister: "My boy, never dilute your damnation. Your congregation will do that for you."

Dr. E. A. Bogus.—Superstition has been defined as the fear of the unknown. I have many times thought how much superstition there is in the community regarding bacterial life. I could not help having this definition come to me as I heard Dr. de Lisle's paper. I did not understand him in the least to argue against proper precautions nor the utmost care, but I did understand him to say just what Dr. Dawbarn has said, that aseptic surgery is clean surgery. I am reminded of something I read a little while ago from Dr. Chapin regarding filth diseases. Dr. Chapin says, "As soon as the germ theory of disease ceased to be a mere theory, and the true facts in regard to the etiology of infectious diseases began to be known, and bacteriology gave us exact knowledge of the life history of the minute organisms which are the cause, the erroneous generalizations of the filth theory became apparent. We can now, to a large extent, discriminate between filth that is dangerous and filth that is not." It is not very many months ago that a gentleman said in the presence of this Institute that instruments used in the case of a syphilitic patient should never be used again. I have understood Dr. de Lisle to say that he has seen, with his own eyes, under the microscope, the death of these syphilitic germs; that while the germ was a living one when he placed it upon the slide, it died before he stopped looking. If this is so, it need not teach us that we can be careless in our measures for cleanliness,

but we can take a great deal of comfort to ourselves in knowing that, in view of the numerous carelessnesses that are sure to happen right along, we may be assured that we are not conveying this dread disease on our instruments. Referring again to Dr. Chapin's remarks, cholera and typhoid fever are both propagated by bacteria that are taken into the mouth, and the tubercle bacilli are carried around by all sorts of breezes. Yellow and malarial fevers are conveyed by mosquitoes of two varieties,—malarial by a mosquito that lives in clean water, and yellow fever by one that lives in dirty water, and yet we find men who work in sewers are not seriously affected by the filth they encounter.

For my part I thank Dr. de Lisle for relieving my mind regarding some of these infectious diseases, but, nevertheless, I shall keep my instruments just as clean as heretofore, while I shall not have the superstitious fear that leads to an over-solicitude that may do as much harm as it seeks to avoid.

Dr. J. Morgan Howe.—I think we are under great obligation to Dr. de Lisle for the paper he has given us. I do not sympathize with that old minister's advice with regard to the strength of the damnation that he would have preached, because his hearers would discount it. I think the simple truth will be always safe to rest on. I think the facts that Dr. de Lisle has given us will do us good. I shall, however, continue my practice of sterilizing instruments, because even remote chances of infection should be eliminated. I do not think Dr. de Lisle means in the least to question the advisability of using all the precautions that are required to prevent our instruments, materials, and everything we use from any possibility of communicating disease from one patient to another.

Dr. de Lisle.—I have very little to say in conclusion except that I thank you all for your kind and just criticism. There are, however, one or two words that I would say. One of the gentlemen has stated that "where there is a possibility of tetanus he flushes the wound with oxygen;" "that the bacillus does not live in oxygen." However, it does live as a spore, and as a spore it gets into the wound. The spore will not germinate in the presence of oxygen, but after the wound has healed, and because it is impossible to flush the cicatrix with oxygen, this inhibiting action is lost and the spore becomes an active bacillus.

Dr. Dawbarn.—And would you advocate the injection of an antitoxin?

Dr. de Lisle.—Most assuredly. One of the affinities of the toxine of tetanus is for nerve-tissue. The toxine of tetanus fixes itself upon nerve-tissue and follows it up through the spine to the brain, and the consequence is that we do not know that we are in the presence of tetanus until the patient is beyond hope, because the first symptom is the setting of the jaws, and then it is too late, because the toxine has already arrived at the brain. A cure may be effected by opening the skull and injecting the serum directly into the brain. The advantages can be readily seen of injecting the serum before the spore has become a bacillus. I thank you very much, gentlemen.

Dr. F. Milton Smith.—Dr. Geo. S. Allan, at our meeting two months ago, read a paper entitled "Extension for Prevention," in which he spoke of Dr. Black's instruments. It has been suggested that some of our Eastern men are very much behindhand, as much as forty years, I think, because they presumably had never heard of Dr. Black's instruments. Dr. Allan has secured a full set of Dr. Black's instruments. They are here for your inspection.

Adjourned.

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ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held on the evening of Tuesday, November 26, 1901, at the rooms of the Academy, 1731 Chestnut Street.

A paper was read by Dr. Otto E. Inglis, entitled "Some Peculiar Cases of Dental Resorption."

(For Dr. Inglis's paper, see page 479.)

DISCUSSION.

Dr. James Truman.—I wish to express my satisfaction with the paper, because it covers in the main the facts that nearly all of us are familiar with, while some of them are very interesting owing to their rarity. I was rather disappointed that Dr. Inglis did not give us some experimental facts relating to the causes of this resorption.

The statement that the giant-cells produce it is not satisfactory to my mind. Whether resorption is produced by the action of giant-cells through the elimination of acid secretions, or whether it is due to phagocytic action, is as yet obscure. As I view it, it is something like the separation of necrosed from living bone, and while that has nothing to do with the subject particularly, yet there is a phagocytic action involved in the destruction of the sequestrum. It has never been explained why it is that necrosis will go on in the bone up to a certain point and then cease altogether. I believe the separation is due to a phagocytic activity upon the part of the cells in the wall of circumvallation which produces a resorption of bone at the dividing line similar to that resorption which occurs in deciduous roots, and when that is accomplished then the dead bone separates from the living.

I could wish, in this connection, that some one younger than myself, perhaps Dr. Inglis, would take hold of this question and come to some absolute decision upon it. The detail of cases, while very interesting, does not clear up the subject.

Dr. J. H. Gaskill.—Dr. Inglis referred to a case that I reported at Old Point Comfort in 1897, which was rather interesting, because it was, at that time, considered rare. Two teeth were affected in the mouth of the same patient. The dentine of the first tooth resorbed, the lingual enamel crushed in, and the pulp had to be taken out, but when the pink spot indicative of resorption appeared in the second tooth I put the patient under systemic treatment. The pink spot gradually disappeared. I have not seen the patient for several years, but the last time he was in it was not perceptible, while before you could see it from across the room. Since then I have had other cases which have been quite interesting to me and which I think will explain some of the obscure cases of odontalgia. I recall to mind the case of a young lady, who complained of two first bicuspid teeth that had been filled with amalgam and had given a great deal of trouble. I removed the fillings, but could not find any cause, and so I filled them with gold. That did not give any relief. Finally I destroyed the pulps, and for a short time that acted fairly well, but about three years later the teeth had to be extracted. I found three lines below the gum margin an opening in the root which extended into the pulp-canal. The gums were firmly attached at the cervix. There had been resorption and the pulp exposed from without in, and the pain was undoubtedly due

to the exposure. I have another patient whom I am watching with a great deal of interest. There is a little resorption of the gum over the first molar at the anterior buccal root. The tooth has no break in its exterior surface, but there is a decided pink spot showing through. These cases throw some light upon obscure cases of odontalgia.

Dr. A. P. Fellows.—I have been very much interested in the subject, and I have a couple of specimens to show, corresponding in many respects to those we have just seen. I had a case the other day in the mouth of an individual suffering from pyorrhœa alveolaris. The root end was very much resorbed, seemingly due to inflammation about the root, caused by the deposition of calculus. Dr. Inglis has just stated that such resorptions are probably due to irritation. In this particular case it seemed very probable. The appearance of this resorption area is somewhat peculiar. It seems that secondary dentine has first been formed within the pulp-canal of this tooth to such an extent as almost to obliterate the canal. Following that, the resorption has removed the apical half of the root entirely. The cervical half has had all its normal root dentine resorbed, but the cementum and the secondary dentine remain intact or nearly so. Looked at from the end the root has the appearance of having been bored by a trephine, the central core being left standing *in situ*. I have here another specimen taken from the mouth of a lady fifty years old, who had worn a partial denture for many years. I noticed a small tumor in the vault of the palate, but did not diagnose it correctly owing to the fact that many of the teeth had been extracted. I made a denture, and about a year later the lady complained of irritation about this tumor. I found that the plate was rubbing pretty hard upon it, and upon exploration I found a tooth which I removed. The gum covered the entire tooth, so that the saliva and secretions of the mouth were not in contact with the crown at all. There was absolutely no decay. After removal I found the enamel very badly resorbed. I think that for this particular case it is proved conclusively that it is due to irritation.

Dr. M. H. Cryer.—I did not expect to say anything on the subject, but I happened to remember that I have in my pocket a tooth which was removed this afternoon by the aid of the surgical engine. The tooth was not in sight at all. It was the third lower molar, and rested against the distal surface of the second

molar. I find the lower cusp apparently somewhat abraded. Now, I am certain that when the distal surface of the second molar is examined, after the wound is cured, it will be found that resorption has taken place, partly owing to the forward pressure or friction that has occurred.

Dr. William H. Trueman.—This is a very good paper and on a very interesting subject, but one that is very frequently difficult to discuss. The specimens are also very nicely prepared, being put on cards so that we can understand them; but I feel that justice cannot be done to them in the few minutes examination of them. The subject of resorption is an important one to understand and has many phases. Sometimes it is physiological and beneficial, and at other times it is pathological and mischievous. It has its practical bearing in a case where some careless fellow has killed a pulp and pushed gold through the end of the root of a tooth, and which then lasts from ten to fifteen years. I have never heard it explained how the tooth which remains perfectly comfortable for ten or twelve years could afterwards become uncomfortable and have to be extracted. I extracted a while ago a tooth which had a crown placed upon it. It had been giving considerable trouble and did not respond to remedial treatment at all. I found the root was malformed and a dowel passed through the root about an eighth of an inch. The one who put it in was not a careless fellow, because I did it myself. I did it thirty years ago? No doubt that was a case of resorption, and no doubt many such cases are. I think that one of the cards illustrates it.

Dr. H. Roberts.—I would like to know whether Dr. Inglis makes any distinction between resorption of the root of a deciduous tooth as a physiological condition and the resorption of the root of a permanent tooth, which comes from abscess, as a pathological condition.

Dr. Inglis.—As to the difference between physiological resorption and pathological resorption, there evidently must be some difference in the primary causes, but not necessarily in the proximate cause of the resorption. Physiological resorption takes place as a physiological process. It is necessary that a tooth should be gotten rid of, and yet it is evident that there is something to a degree pathological in the condition, for so long as the condition of hyperæmia is not set up by some cause these roots are not, as a rule, resorbed. When sufficient but not too great irritation is set up,

then the roots are resorbed. We see that in cases where the roots of vital deciduous teeth are not resorbed perhaps for many years after the proper time. I mentioned several cases where cuspids were retained. I mentioned one case where eight deciduous molars are retained in an adult because the bicuspidis have not developed and the resorptive action is not yet set up. In the case of chronic abscess the thought was suggested that the resorptions were caused by granulation-tissue produced to repair the loss by suppuration, a condition which could only occur when pus formation is in abeyance, as sometimes occurs in chronic abscesses even to the point of a temporary healing of the fistula. As to the presence of giant-cells in a resorbent organ, Tomes has demonstrated that. Black is also of the opinion that resorption takes place as the result of giant-cells.

Dr. Schamberg.—I believe a very interesting example of physiological resorption is the resorption of bone-tissue by pressure from muscles, arteries, and other soft structures which pass over them. I believe it is an acknowledged fact that the facial notch at the angle of the jaw is due to the passage of the blood-vessel over that point, and that while one may, in a measure, inherit this notch, at the same time it is due primarily to the presence there of the artery. There is therefore little doubt in my mind that there is such a thing as physiological resorption. The paper is intensely interesting to me, inasmuch as I am at the present time working upon the reverse condition, exostosis, in an effort to classify the locations of exostosis upon the various portions of the tooth, and to make a study, both macroscopically and microscopically, of its appearance. I am at present endeavoring to stain according to the methods described recently by Dr. Miller. I have not perfected the technic, but hope, at some future date, to present the results of this little study. To this end I would like to ask the members to send me any exostosed teeth they possess which may be worthless to them. I shall be very thankful for the use of them.

Dr. S. H. Guilford.—I would say, in regard to this paper, that it strikes me as being a very good one. If we had more of these case papers, they would be of very great value. So often we have peculiar cases in our practice that we lay aside and do not publish. When one prepares a paper on a subject, or an article for one of our magazines, or a book that is coming out, he goes through the literature of the subject and very frequently he does not find what he

wants. If all these interesting cases were noted and placed on record in permanent form, they would be of value to those who come after. So that I think Dr. Inglis deserves a great deal of praise for this paper.

The President.—Dr. Inglis, will you close the discussion?

Dr. Inglis.—Mr. President, the question of resorption of the enamel does not seem to me such a very difficult one, if we may judge from the cases that have been presented in the past and those which we have had this evening. I think that if you will observe these specimens, you will find that not only the enamel is resorbed, but that the bays of resorption extend into the dentine. Dr. Truman prefers to speak of these areas as erosions, and, indeed, I am inclined to believe that the active chemical agent will eventually be shown to be identical in the two conditions. For myself I am inclined to adhere to the nomenclature recently used by Miller in describing a case similar to those which we have observed. It seems more logical to call this condition "resorption," as it occurs in teeth which have never been subjected to oral conditions and under the action of soft tissue irritated to the point corresponding to proliferative activity and commonly called granulation-tissue. The resorbed areas are rough, a condition exactly corresponding to areas produced by continued trickling of acid, such as dilute acid sodium phosphate, over the crowns of extracted teeth. The bays of excavation in the crown correspond to the bays produced in resorbed roots.

In the erosion of enamel and dentine in the mouth there is added to the action of the acid from the labial glands a constant friction of the lips, brush, or food which probably removes the soluble salts resulting from the reaction between the acid and tooth-tissue.

In resorption the salts are also removed, but, lacking friction, the areas remain rough. Perhaps Dr. Cryer's case just mentioned may be an example in which the solvent plus friction has produced a true subgingival erosion.

INCIDENTS OF PRACTICE.

Dr. Walter H. Neall.—Under the order of incidents of practice I would like to report a case of quinine poisoning. When a patient of mine takes quinine he has a high fever and peeling of the skin from his hands and feet. Even his finger- and toe-nails are affected.

I wrote him a letter asking many questions as to the details of his case, and he very kindly replied as follows:

"1. Born in Philadelphia, Pa., December 12, 1854.

"2. First noticed the action of quinine upon me when about twenty-two years of age, at which time my physician informed me that it was 'German measles.'

"3. Every time I caught a cold and was given quinine, among other medicines, I had the 'German measles.'

"4. My physician at one time prescribed a tonic containing quinine, iron, and strychnine; I had another attack, and it occurred to me that the quinine was the cause of the rash and its attending discomforts, so when I was in good condition and free from all colds, etc., I took a two-grain pill of quinine, and that proved conclusively what was giving me so many attacks of 'German measles.'

"5. About two hours after taking even one-half grain I have a high fever, small lumps appear on my arms and chest about the size of a small pea, and I become red as though I had scarlet fever or measles. The effort of breathing is very painful, and I am obliged to have my chest from above the collar bone almost to the umbilicus covered with a hot mustard-plaster. During this time it feels as if some thick substance were being forced through my flesh. This lasts about three hours, after which I can generally sleep.

"6. The skin of my hands and feet can invariably be pulled off two weeks after taking the first dose of quinine.

"7. The finger- and toe-nails seem to be brittle, and as they grow out there is quite a ridge, which is probably formed by a new nail joining the old one.

"8. About three hours after the rash appears it disappears, and I have no further trouble, no matter how long (say a month) I continue taking the quinine. After I have pulled the skin off my hands, which takes only a few minutes when it is ready to come off, I am as good as new, the skin being tender for a few days.

"9. My tongue becomes heavily coated the day after taking quinine. This coating gradually disappears. I have noticed no indications in regard to my liver.

"10. My eyes and ears are affected as though I had a heavy cold.

"11. To me the effect of this drug seems to stop all growth for the time being. I have noticed that my hair also seems to have

stopped growing, and does not require trimming for say a month or six weeks. My daughter, who is now over twenty-one years of age, is not affected in any way. My son, who is in his ninth year, has the same experience that I do. I cannot say in regard to my parents; I have never heard through their brothers or sisters that they were affected in any way."

This gentleman appeared in my office within the last two weeks suffering from this quinine poisoning. He had taken certain advertised powders concerning which he had questioned his physician, but which the latter carelessly permitted him to take. A brother practitioner and I examined him. He showed how he could remove his skin with his fingers. He said he could do the same with his feet. He appeared like a person with a very bad case of sunburn without the redness usually attendant. After he stops the quinine his skin will still peel, and the new skin forming will take on the same affection if he renews the quinine treatment. I have not known before anything of this kind, though I know that in some cases the flesh will puff up and there will be great itching. I thought the case would interest you.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

HARVARD ODONTOLOGICAL SOCIETY.

At a meeting of the Harvard Odontological Society, held December 26, 1901, the President, Dr. Paul, opened the subject of the meeting with the following prefatory remarks.

President Paul.—The next item is "Some Things I have found Useful in the Practice of Dentistry." We are fortunate in having one of the *older* gentlemen with us this evening. It is a rare thing when we can have a bald head at this end of the table; to-night we are favored with a couple of them. There are some that ought to be bald, we will admit. We are to hear from one of these semi-bald-headed gentlemen this evening, and I take pleasure in introducing Dr. A. H. Stoddard.

(For Dr. Stoddard's paper, see page 465.)

DISCUSSION.

President Paul.—Gentlemen, there is certainly something of interest for all in what we have just heard. The matter is now before you for discussion. I have no doubt Dr. Stoddard will endeavor to answer any question which you may put to him. He is very clever; he may not be able to answer all your questions, but I think he can.

Dr. Boardman.—I would like to ask Dr. Stoddard how he applies the soft rubber. Does he vulcanize it at the same time he vulcanizes the whole set, or does he put it on afterwards?

Dr. Stoddard.—I have had some experience in both ways. There are some cases where I have added it after the case was made. It is more satisfactory to put on the soft rubber as the case is being made, rather than afterwards, although it can be put on afterwards.

Dr. Boardman.—Where do you get that soft rubber?

Dr. Stoddard.—I have had the Boston Dental Laboratory do all this work for me, and they always have it on hand. They have the red velum rubber, as well as the black; the red looks better than this black, but I have used black on account of the purity more than anything else. It is very difficult to finish the edge of this soft rubber so as to be smooth. In trimming a plate, it is better to make allowances for that, so you will not have to trim it any more than you can help.

Dr. Sears.—Does it make any difference in the time of vulcanizing?

Dr. Stoddard.—I am not prepared to answer that question, because, as I said, I have not done this work myself. I have them do it for me.

Dr. Estabrook.—I have always heard that these soft rubber cases made the mouth very sore, and also that the soft rubber turns hard in a very short time and absorbs the secretions. I would like to ask what the experience has been that way?

Dr. Stoddard.—My experience only extends over a couple of years. I thought when I put it on, probably it would deteriorate, and perhaps become offensive; but these cases I have seen have not changed at all, have not become offensive or deteriorated, and I think any of the patients who have had it done would be perfectly willing to have it done every year or so in order to gain the comfort which they have had from it.

President Paul.—Dr. Stoddard spoke of the plate breaking. What is his experience with the soft rubber then?

Dr. Stoddard.—Of course, it weakens the plate more or less, it naturally has no strength, and it is rather difficult to repair. The last case, the one I spoke of which broke, I told them to vulcanize together again, but they did not succeed, and finally I had to take off all the soft rubber that was put on the first time. I took an impression and made a model, set the plate on it again, and had it revulcanized, with new soft rubber over the entire surface.

Dr. Stanley.—I have used the soft red rubber for some time in certain cases. I find that oftentimes you can do away with any plate in the roof of the mouth. Where the condyles are quite large you can vulcanize this soft rubber right around them and cut out the roof of the plate altogether, and get remarkably good suction. I have never used any of the black rubber, but I should think that would be purer, would not absorb the secretions of the mouth, and would last longer. I have had some cases that have worn three or four years. The suction is all right, but it is not quite as cleanly as a hard rubber plate would be.

The idea of vulcanizing all over the gum is new to me; I never have used that. I should think it would be very good, and that it would improve the suction very much. I have found, where I have had to vulcanize a case, or repair it, the elasticity of the rubber was about the same. I had one patient who claims he has had about thirteen sets of teeth. I have made him two, and he has not a very good mouth to fit, but he wears the soft rubber.

Regarding that rubber case that was broken right through, I always, in making a lower set, put in a strong piece of wire to help strengthen it. By using the metal that White has made purposely for it, it will improve the strength of the thing very much.

Dr. Giblin.—I have also used the soft rubber, but not in exactly the way the essayist has explained to-night. I have added it to a portion of the lower plate, built it up with new rubber, and vulcanized at a low heat. I have found that the red rubber, vulcanized at a low heat, will be soft and produce the same effect as this velum rubber. This black rubber may be purer in the mouth. One of the actions of this soft rubber is, it peels from the hard rubber below, which exposes the sharp edge and cuts into

the membrane and irritates it. I think hard rubber, vulcanized at a low temperature, will produce about the same result; at least, it has in my case; but perhaps the other rubber is better.

Dr. Chase.—I would like to ask Dr. Stoddard if the appliance that he has for grinding down the porcelain rods can be obtained anywhere?

Dr. Stoddard.—No; I made that myself. I have been using it some for the past two or three months, but it is not on the market. I do not know whether it will be or not. It is not patented. Any of the gentlemen who choose to make one can do so.

Dr. Chase.—Perhaps Dr. Stoddard will make some for us.

Dr. Werner.—How many different sizes have you now?

Dr. Stoddard.—I have six sizes of the inlay burs. I can make as many sizes of the rods as I choose, because I can cut the rods any size by setting these set-screws, pushing those pieces together, and setting the screw up.

Dr. Werner.—I am speaking of the corundum disk.

Dr. Stoddard.—That is the only size I use. The large ones I buy. The reason I use these is, there are frequently very narrow fissures in the molars and bicuspidis when it is impossible to use any corundum stone that I can buy. They soon wear out, but being able to make as many as I want, I frequently use one or more on a filling.

Dr. Werner.—They are very soft, are they not? Do you have any difficulty in making the mandrel stick to it?

Dr. Stoddard.—No, I have never had them come off the bur. They mould right around it, so to speak, and cannot come off.

Dr. Clapp.—I have an instrument after this same pattern, which was made some years ago; a number of different moulds, different sizes of burs for the wheels, and the directions said, put your pieces of corundum stone, any stone that you have used for artificial work, in your lathe, put a sufficient piece here to make the wheels you want, and then put it into boiling soapsuds and squeeze it together.

Dr. Stoddard.—I have never had any trouble with these sticking, because the instrument is always cold. I mould the corundum with my fingers like that, and then put it in and squeeze it together; this being cold, it does not stick to it.

Dr. Clapp.—I heard the other day of a dental operation which

perhaps may amuse you a little. An Irishman who was going along the street saw in a druggist's window a sign, "Tooth-powder for sale at greatly reduced prices." He went into the store and said, "I've been out of conceit with them dentists for a long while; just give me twenty-five cents worth of that powder, and I'll blow the thing up myself."

Dr. Moffatt.—I would like to ask Dr. Stoddard if he has ever used the Canada balsam in the mouth for setting the inlays?

Dr. Stoddard.—No, I have not. I mix Canada balsam with benzol and boil it. It is the same which oculists use in setting lenses. I have tested it outside the mouth by soaking in water, etc., but I have not confidence enough in it to use it in the mouth.

Dr. Moffatt.—That one that was set without anything I could not get out of the cavity. Why not do that in the mouth?

Dr. Stoddard.—I think it is possible to set these inlays as Dr. Moffatt suggests. It is possible to make such a tight joint that water cannot get through it, as a glass stopper is put into a bottle. But they might work loose in time, and so I prefer to use something to set them with, rather than to rely on that alone.

Dr. Moffatt.—Does that soft rubber heat the mouth?

Dr. Stoddard.—In the cases where I have used it I did not see that it did. It might in some mouths.

Dr. Cooke.—I have said Dr. Stoddard is a very ingenious man. Now, I expect one of these days to find a solution of his prosperity, and to-night I have got a little inkling of it. He brings in this machine, that is a good deal like a patent disk-holder; some day he will let it out that he has a machine that presses out five-dollar gold pieces, or something like that, and makes them so they will go first-rate.

I made these things several years, similar to his, only he takes one, while I had a lot of little corundum wheels. I took an old bur, worn down, and filed it down on a regular mandrel; then took the material, just as he does, softened it, ran it over the end, and let it get cold. Then I filed it down, and had a little round point that stuck very well because it was put on with direct heat. A Taggart mandrel makes those very nicely, by using soapsuds and a larger wheel. This came out about fifteen years ago, costing about ten dollars with all the points with it. Will oxysulphate of copper stick when the cavity is wet?

Dr. Stoddard.—I think it will. I think it will retain its edge

even when the tooth is moist; but in these cases where I have tried it I was able to keep the cavity dry until I had finished.

Dr. Cooke.—When it is hard, very hard?

Dr. Stoddard.—It does not get very hard, not so hard as some of the oxyphosphate of zinc fillings.

Dr. Cooke.—Do you polish it down, the same as on any cement filling? Can you sand-paper it down if required?

Dr. Stoddard.—I have not tried to sand-paper it afterwards. I was satisfied, after I had burnished it smooth, to leave it alone.

Dr. Cooke.—I had a gentleman come in who had a loose tooth that wobbled all around. He was sent to me by a friend of mine. He had to argue a case before the court, and had to have a plate made. He thought he would have another string to his bow, and wanted to know if I could take an impression with that tooth in and make a plate. I took hold of the tooth and moved it a little and I had it in my fingers. He said I rather had the advantage of him, because his other friend (a dentist) did not dare to treat him that way.

I took the impression and tried in the teeth in the afternoon and took the bite, and it was done the next day. Forty-eight hours from the time I got my fingers on that tooth I had the teeth in his mouth. I lined them with this velum rubber,—thanks to Dr. Stoddard,—and they adhered in fine shape; and he argued his case and won it. He had not been back to see his friend. It helped him out of a great deal of difficulty, for if I had tried it with the hard rubber it would not have remained in place. He did not seem to have a great amount of ingenuity in holding up a plate. He has worn it since then. I saw him a little while ago, and it was then working fairly well.

Dr. Moffatt.—I would like to ask Dr. Stoddard if in the use of that oxyphosphate of copper it causes unnecessary pain when it is put into the cavity, and if he has found anything to overcome that sensation?

Dr. Stoddard.—I do not know that it causes any more pain than any of the phosphate fillings. I think that the pain is due to the rapid drying process that takes place, and I do not see how we can overcome that in a cement filling, except by painting over the surface with resin varnish, which I have done in some cases.

Dr. Cooke.—I want to speak about those instruments,—the set of four. I like the other two quite as well as these two. Those

were originally got up for amalgam, and the ones I have are nickel-plated; these are not. They were, I think, thirty-five cents each. I have used them for amalgam. I have not used them much for cement, though I have two of the broader kind that I use in connection with the cement sometimes. Of course, with the cement they will last only a little while, and it does not work as smoothly on the amalgam filling as a nickelled surface.

When I was in New York I went to Grafrath's, 218 West Twentieth Street, and thought I would see quite an establishment. I was with Dr. Meriam and Dr. Werner. We went down a long, narrow alley, and there was a little bit of a place with small windows, hardly any light, and there is where he does his work. He has one man there. He has not much of a plant, but he does very good work with it. He has a gas-engine, and in about two minutes he can have all the machinery running.

Dr. Libby.—In the use of that velum rubber, do you wax up your case as usual, and simply send it to the laboratory? What instructions do you give them?

Dr. Stoddard.—I tell them I want it lined with velum rubber of a certain thickness. There are about four thicknesses here; I told them the number of thicknesses, but at first I folded up blotting paper. It is better, in investing it, to invest it so that the line where the flask comes together comes above the soft rubber, and then the margin of the soft rubber comes out finished.

On motion, adjourned.

HARRY W. HALEY,
Editor Harvard Odontological Society.

Editorial.

THE REGENTS OF NEW YORK AND THE D.D.S. DEGREE.

It may not be generally known that for more than a year past there has been a strong influence brought to bear on the Board of Regents of New York to confer the title D.D.S. upon a certain number of estimable gentlemen in the State, and some beyond its borders, who now hold what is known as the M.D.S., an honorary

title given by authority of the State some years ago to individuals who had honorably sustained the reputation of dentistry.

There was not at the time serious objection made to this, as it meant no more than any other honorary title and in no way conflicted with the educational degree given by the chartered dental colleges of the country.

A year ago an attempt was made by the Dental Society of the State of New York to induce the Regents to change the M.D.S. to that of D.D.S. It was, doubtless, imagined that the voice of this august body would at once claim attention and the matter would be settled without contention; and further, that in a short time a number of persons of excellent personal reputation would stand upon the same professional equality with college graduates, writing D.D.S. after their names, with all the honor thereunto attached. They probably forgot, in their elation, that some members of the State Society had laboriously taken the curricula of the dental schools and had earned the degree by continuous labor and at serious cost financially, and were not disposed to see the title given away at the capital of the State, and that by the highest legalized body governing and guarding its educational interests. They felt that if the Regents recognized this demand, the fair name of the State of New York would be smirched and the influence of the board, as an educational power, be gone forever. It was also felt that if this be attempted under the sanction of legislative authority, it would place the State in the odious position of granting unearned degrees.

At the recent meeting of the Dental Society of New York, May 14 and 15, 1902, the subject was again brought before that body and was warmly discussed. The Association of Faculties and dental colleges in general very appropriately received severe castigation. It would, of course, have been expected that those who favored securing the D.D.S. through a written order from the Regents would have no use for dental colleges. The manufacturers of diplomas have no need for schools, but have a decided claim upon the engravers and lithographic press.

The matter is again before the Regents of New York and will probably be decided in July, if not postponed. This, it is hoped, will be done, in order to secure an opinion from the National Associations representing dentistry, which will not meet until the last week in July.

It may be assumed that these national bodies have nothing to do with this question, that it is one simply of local interest. The answer to this would be that New York does not own the degree of D.D.S. (Doctor of Dental Surgery). It has become national in character and international in reputation, and when a certain body, to its discredit, tries to smirch this degree and lower its value, it is not only the right but the duty of all dental college graduates, the world over, to rise up and demand that this deed shall not be done. New York as a State, majestic as that is, is nothing, but the principle involved and sought to be violated is everything.

At the meeting of the National Association of Dental Faculties, held at Milwaukee, August 2 to 6, 1901, the following resolutions were passed:

WHEREAS, The New York Legislature, in a bill signed March 28, 1901, gave to the Board of Regents authority to exchange the M.D.S. degree for the D.D.S. degree, the former, M.D.S., is strictly a local degree conferred by the Dental Society of this State; and

WHEREAS, The said Board of Regents at its annual meeting, July 1, 1901, declined to exercise the power conferred, and referred the subject to the New York State Dental Society for a more definite report on the matter; therefore, be it

Resolved, That the thanks of the National Association of Dental Faculties be tendered the Board of Regents of the State of New York for its action postponing a final decision, thus giving opportunity for protests against the proposed action.

Resolved, That the National Association of Dental Faculties respectfully protest against any attempt to undo the work of this Association, which for many years has had in force a law which does not permit the granting of the degree of Doctor of Dental Surgery (D.D.S.) except at the close of a course of study in some accredited school and on proper examination.

Resolved, That we further earnestly and respectfully ask that the authority thus given the Regents be rescinded.

Resolved, That a copy of these resolutions, signed by the President and Secretary, be sent to the Regents' office at Albany, N. Y., and also to the Secretary of the New York State Society, W. A. White, Phelps, N. Y.

Further action by the Board of Regents was postponed until the dental profession of New York could be heard from. This, it is presumed, meant until the State Society could again revise its decision. This was done, as before stated, last May, and the resolution favoring the change of title was adopted by an overwhelming majority. It was expected that this would settle the question and

that those who desired to maintain the integrity of the degree would quietly settle down and await results. Fortunately all men are not "cravens when the storm gathers," and there has been a strong effort made to counteract this decision of the State Society. Whether this will be any more successful remains for time to determine.

The history of the origin of the D.D.S. degree has yet to be written. It was the outgrowth through a declared and positive opposition of the medical fraternity to anything dental. This piece of stupid arrogance on the part of medical men forced Harris and his colleagues to originate a distinct title never before known, that of Doctor of Dental Surgery, or abbreviated D.D.S. This degree was made legal by charter rights conferred by the State of Maryland. It was born in difficulty and nursed into life through long and arduous effort by the dental colleges of the country, and no attempt was made in the United States to substitute another until Harvard University adopted the degree D.M.D. (*Dentariæ Medicinæ Doctor*) as being more appropriate. Time has intensified the love for the D.D.S., and the graduates of our dental colleges, now performing professional work in all lands, will not willingly stand by and see their hardy earned title dragged in the mire, and that by one of the most rigid educational bodies in America,—the Board of Regents of the State of New York.

The effect of this order of the Regents would be to practically confer an honorary degree upon the worthy gentlemen now holding the M.D.S. title. Honorary degrees have been long since abolished in professional schools, and in order that subordinate dental colleges might not make the mistake of conferring this degree the Faculties passed, some years since, the following resolution, as a part of the organic law of the organization. "No college connected with the Association shall confer any degree as honorary which is usually granted in due course of study and examination. All former rules on this subject are hereby repealed." Frequent applications have been made by colleges connected therewith to be given the privilege of conferring this degree upon distinguished men in this country and Europe, but they have invariably been refused. The Faculties has no power over the Board of Regents, but if it should give the D.D.S. to the gentlemen demanding it, there will be manifest a power behind that of the college organization, and, greater than it, the dental profession, that will assuredly

hold these easily secured honors in supreme contempt. In this day and generation men and women are judged by their ability, and the degree legally held is simply a standing certificate that the holder thereof has laid well the foundation of knowledge and has been recognized by his peers. The man without the degree is equally recognized by the great body of his colleagues, and has no need to add to his name any letters, or to cover his breast with medals of honor, for his reputation is known of men. The writer has small sympathy with this craze for titles. When the degree of LL.D. is given to all sorts of men and for all sorts of service, in which learning occupies but a small part, the self-respecting individual may well hesitate in accepting empty honors, and may ask themselves, Better be plain John Smith with his mental power than Richard Roe with his aggregations of possible stupidities and sham letters.

If the majority of the members of the Dental Society of the State of New York are in favor of conferring honorary degrees, they may be assured that the most intelligent of the dental profession will hold them to a strict accountability, for by this they have forced an entering wedge that will eventually sever into its original elements the growth of fifty years of educational labor. The principles which enter into the life of professions are well grounded and understood of all men, and are the result of the combined experience of generations. To tamper with these means a retrograde and a loss which may not be overcome in a century of work. May the Regents of New York carefully consider that upon their action will depend not the mere changing a title, however small or great that may be, but it may be the means of destroying the confidence in the stability and trustworthiness of men who have had in charge the educational work of the country.

MASSACHUSETTS DENTAL SOCIETY, ANNUAL MEETING.

THE thirty-eighth annual meeting of this Society was held at Hotel Brunswick, Boston, on Wednesday and Thursday, June 4 and 5, 1902, and the writer, for the first time, had the pleasure of mingling with Massachusetts men in convention. To assert that

it is always pleasant to associate with those of our own household is a truism, but in this case it was doubly gratifying to find that the men of Massachusetts were not only of our own household, but they had absorbed the spirit which properly enters into the development of true professional life.

The meeting was attended by a large number, the membership being nearly doubled upon this occasion.

The papers were of interest. The first was "Crown- and Bridge-Work to the Country Dentist," by Dr. Walter F. Bisbee, of Camden, Me. Dr. Horace E. Eaton, of Toronto, Canada, undertook to solve the difficult problem of how to handle children in the dental office. Those who expected a detail of old familiar methods were agreeably surprised to find that the Eaton system had not only a flavor of originality, but in his hands it seemingly solved a great professional difficulty. It is questionable, however, whether many will be able to adopt his very sensible ideas.

Dr. E. C. Kirk, of Philadelphia, gave a description of his investigations with the oral fluids, using the projecting micropolariscope to illustrate.

Dr. Joseph Head, of Philadelphia, and Dr. Loomis P. Haskell, of Chicago, the first on "Porcelain Inlays" and the latter on "Prosthetic Dentistry," with models, were followed by Dr. J. N. Crouse, on "The Present Condition of the Dental Protective Association." These formed the principal features, in papers, of the first and second days. The clinics covered a variety of subjects, and possessed a practical value to those who can see the operations, but this difficulty of not being able to see will always be an objection to these public efforts.

The meetings were all held at the Hotel Brunswick, and everything was done by the proprietors of that house to make things pleasant for every one.

The centre of attraction was the banquet held Wednesday evening. A novel feature, and believed to be peculiar to New England, was the making this "Ladies' Night." Their presence contributed much to the enjoyment of the occasion. The usual accompaniment of gastronomic efforts composed exclusively of men, wine, and cigars, were notable by their absence. While the inner man was well supplied, the chief attractions were musical and intellectual.

Before the President, Dr. Frederick E. Faxon, called to order,

the tables in the centre of the room were all dexterously removed by the waiters, and a true social gathering of two hundred earnest men and women were grouped together to consider the important question of "The Law in Relation to the Practice of Dentistry." It was an unusual thing to discuss a serious question, such as this, at a banquet, but, notwithstanding it was unusual and not a very entertaining subject, it held the audience to a late hour.

The speakers, it is presumed, had no idea of settling this much controverted question, but they undoubtedly endeavored to help thought in the direction in which they were interested.

The law side of the question was explained by Hon. James A. McGeough, and the dental side, for and against, was energetically discussed by Drs. Kirk, Guilford, Head, Parmelee, Hurlburt, Filbrow, and Truman. Possibly the laws will remain on the statute books notwithstanding this avalanche of words, but, aside from this, it proved a delightful change from the ordinary tedious after-dinner talks that have become too much the dread of speakers and auditors. Massachusetts has set an example that others can follow with marked advantage.

The music of the occasion was unique in some of its features. That this was an enjoyable part of the programme was to have been expected in Boston, the centre of musical training in this country, but a peculiar addition was that each speaker was introduced by music and a song. The effect was as excellent as it was novel. It was late when the banquet broke up, with the feeling by the writer that the hours had been most pleasantly and not unprofitably spent.

Massachusetts men made a great effort to have this meeting notable among the thirty-eight annual gatherings, and that they succeeded those who were honored as guests can most truly affirm, and for the writer it was an occasion to be remembered for many things, but most of all for that advanced professional spirit manifested throughout, and which must make a decided impression upon the succeeding decades of the twentieth century.

PROFESSOR WILLOUGHBY D. MILLER.

THIS distinguished member of the dental profession made a hurried visit to this country during the mid-weeks of June, mainly for the purpose of receiving the degree of Doctor of Science (Sc.D.) from the University of Pennsylvania, his alma mater, at its Commencement, June 18. It is not difficult to decide in this case which has been the most honored by this, the University or Professor Miller. It is unquestionably true that an institution receives more than it gives when the world honors one of its children, and in this case the recipient of this degree has become recognized throughout the dental and medical world as one of the brilliant investigators of the nineteenth century. This degree from his own university, though much delayed, is simply a proper recognition of merit long since accepted in Germany and throughout Europe. The conferring of this degree, therefore, means more than a simple piece of parchment, for it silently emphasizes the fact that dentistry is now occupying a position that the learned institutions of the world are forced to recognize and honor. The man that learns self-respect has no difficulty in being respected, and this is true of professions. The lessons taught by Professor Miller's life are full of encouragement to the young men in dentistry, and should be carefully studied.

Bibliography.

ABBOTT'S BACTERIOLOGY. A Practical Manual of Bacteriology for Students and Physicians. By A. C. Abbott, M.D., Professor of Hygiene, University of Pennsylvania. New Sixth Edition, revised and enlarged. In one 12mo. volume of six hundred and thirty-six pages, with one hundred and eleven illustrations, of which twenty-six are colored. Lea Brothers & Co., Publishers, Philadelphia and New York.

The issue of the sixth edition of this most valuable work on Bacteriology, by Dr. Abbott, is the best evidence, if any such be needed, that the author has met a want and has given the seekers

after information in this direction a book at once reliable and as thorough as present experimental knowledge can produce.

The fifth edition of this book was fully reviewed in this journal some three years since, and the favorable opinion then expressed can be repeated, with this addition, that the sixth has been greatly improved and made somewhat larger by the advances made through bacteriological researches.

The author says, in the "Preface to the Sixth Edition," "The chapter on suppurative and inflammatory conditions has been enlarged with a description of the causative agent of epidemic cerebro-spinal meningitis; that on tuberculosis with a summary of our knowledge of the acid-resisting bacilli that are in many ways allied to bacillus tuberculosis, and with a description of the more important pathogenic streptothrices; to the chapter relating to the infections of the intestinal canal a summary of the new work on dysentery, with a description of the micro-organism now believed to be the cause of that disease, has been added."

Dr. Abbott has answered by the book itself the query which he says the student invariably asks after one observation has been completed: "What shall I do next?" The book satisfies this natural inquiry very fully, for after defining what is meant by bacteria and "their place in nature," morphology, etc., he carries the reader step by step through the technic necessary in the study of these low forms of life, and from the practical he advances to the "Application of the Methods of Bacteriology. Descriptions of the more Important Species."

Chapter XVIII. deals with "Tuberculosis, Microscopic Appearance of Miliary Tubercles, etc.," and is one of the most important in the book. It is, however, impossible to give a special place to any one chapter as being more important than another. The reader will find each pathological subject treated with that clearness of description that has made this book of Dr. Abbott valuable above others of a similar character. The feeling goes with the reading that all that is known to date regarding bacteria has been mastered by the author, and by careful study of its contents the student may share in degree an equal knowledge.

While the bacteriological laboratory cannot take the place of clinical experience, the practitioner who depends solely on symptomatology for his information and not upon the origin of pathological conditions cannot be one to be relied upon. On the other

hand, laboratory work alone is not sufficient to make the skilled diagnostician. Hence the true pathologist combines laboratory and clinical experience.

For those who have not had the opportunity for laboratory research, and they are legion, this book points the way to become intelligent upon a subject one of the most important of all modern medical studies, and this is especially true as applied to dentistry. The oral cavity is the vestibule of the entire organism, and the pathogenic and non-pathogenic organisms contained therein demand special study, and one unfamiliar with these has no right to assume the responsibilities with which he is hourly and daily confronted. To such as these a careful study of this book will be of lasting benefit, and to all others it will be a constant and invaluable work of reference.

NOTES ON MATERIA MEDICA, PHARMACOLOGY, AND THERAPEUTICS, FOR DENTAL STUDENTS AND PRACTITIONERS. By Douglas Gabell, L.R.C.P., M.R.C.S., L.D.S., Assistant Dental Surgeon Royal Dental Hospital, and Harold Austen, M.D., B.S. (Lond.), L.R.C.P., M.R.C.S., L.D.S., Assistant Dental Surgeon Royal Dental Hospital and Lecturer on Dental Materia Medica. Claudius Ash & Sons, Limited, London, 1902.

There is a great need of a work on materia medica designed exclusively for dental students. Attempts have been made to meet this demand, with more or less success, but the ideal text-book on this subject has not yet appeared.

When this book was opened for review it was with the hope that at last this had been accomplished. The disappointment was therefore great, on reading the preface, to find the authors writing as follows: "It will hardly be said that this volume does not claim to be a complete treatise upon the so-called dental materia medica, nor, indeed, anything more than an attempt to set down as briefly and in as practical a manner as possible those properties, actions, and applications of drugs which are of utility or interest to the dental surgeon.

"For this reason any description of the *general* therapeutic action of drugs has been omitted, except in cases . . . such therapeutic action approaches nearly to the border-line which . . . divides dental from general medical practice."

It is difficult to imagine that a work on materia medica can

have any real practical value that omits allusion to the therapeutic value of the drugs described. It is the fault of all works of this character that the authors seem to consider condensation a great virtue. This is no doubt a valuable quality, but when writers on *materia medica* try to be as brief as possible, it means a mere skeleton of facts, the form of which is to be memorized by the student. There is no room here for that mental analyzation so necessary in this study.

The authors consider the "pharmacological classification of drugs" to be the most practical one for the dentist. This has an advantage over that ordinarily used, but it means much cross reference that must become annoying to the student, and it also involves constant repetition, which, while not objectionable as a means of impressing facts, becomes perplexing when searching for them.

It would be well in future editions to omit this sentence: "The caustic action of arsenic may be employed as an obtundent of sensitive dentine." The authors say subsequently, "It [arsenic] is very effective, but very dangerous to the pulp." If so, and there is not the slightest doubt of the truth of this remark, why use it at all? Experience has demonstrated that the pulp will become devitalized by its use, no matter how shallow the cavity.

In many respects this book is an improvement over others written upon this subject, and should the authors change the objectionable features and add some matter omitted, it may be made one of the most valuable text-books published, for it is not only well written, but generally very correct, a very important matter in a book of this kind and a quality unfortunately not always present.

Biographical Sketch.

DR. BENJAMIN LORD.

THE recent death of Dr. Benjamin Lord, May 3, 1902, leaves another vacant place in the ranks of those who made dentistry what it was in the nineteenth century, and who, by their work, laid the foundation for a future superstructure worthy the great advance that should be made in the next one hundred years.

Dr. Lord, although a quiet, unassuming man, possessed a power that probably only his most intimate friends suspected. He was one who truly hid his light under a bushel, but it was always burning and ready for those emergencies that came to him oftener than to most men.

Dr. Lord was born on a farm near Trenton, N. J., August 25, 1819. The portion of his life from then to maturity was probably spent, as most farmer's sons spend theirs, in hard work and little relaxation, but not much is known by the writer of this period in his life. It is very evident that the trying and monotonous labor of the farm failed to meet his taste or his ambitions, for we find him prior to 1840 in Newark, N. J., in the office of his brother, William G. Lord, studying dentistry. He began practice for himself in 1840, in Monticello, Sullivan County, N. Y., but soon abandoned this and moved to New York City.

He rented an office here in a boarding-house on Broadway below Tenth Street. The prejudice then existing in the average medical mind against any association with dentistry is well illustrated by an incident occurring here, which forced Dr. Lord to give up this office. A physician boarding in the family objected to a dentist's presence in the house, and for the sake of peace he removed to the New York University Building, on Washington Square. This has within a few years been replaced by a large business building.

Dr. Lord's studious character led him to the study of medicine, which doubtless would have ended in his receiving the degree, but after taking one year at the Medical College of the New York University, he was obliged to abandon the idea on account of increasing practice, which necessarily absorbed all his time.

The writer's intimacy with Dr. Lord fills nearly a third of a century. He then lived in a home well fitting the man and his very large practice, and in this he remained to the day of his death. Notwithstanding the great change from the simple farm life of his youth, he ever remained the quiet, humble worker, active always in good works.

His methods of practice continued as he was taught, and he belonged to that fast-disappearing race of dentists who practised during the first decade of the second half of the nineteenth century. To say that he made no changes in his practice would be doing Dr. Lord great injustice. While he never adapted himself to modern appliances, he was constantly devising instruments to

facilitate his methods of work, and was exceedingly generous in distributing these among his professional friends. Some of these are of very great value in the manipulation of non-cohesive gold and in the finishing of fillings on proximate surfaces.

He possessed remarkable tactical sense, and was in the habit, even in recent years, of filling and refilling cavities in extracted teeth to test different kinds of gold- and tin-foil and also various shapes of instrument points.

It was in his interest in local society work and in dental literature that Dr. Lord found his chief interest outside of philanthropic labors and his daily practice. He was untiring in his efforts in maintaining an advanced standard for his profession. He regarded with disfavor the constant attempts of the commercial interests to dominate dentistry. To him all connection with trade was unprofessional. In furtherance of this view he became an active supporter of the *INTERNATIONAL DENTAL JOURNAL*, contributed freely of his time and means to advance its circulation, and retained his active interest in it up to the day of his death.

In the local dental organizations with which he was at various times connected he was always active, and contributed papers from time to time of great practical value. He was not, however, an active disputant, and seemed to the writer to have a preference to allow others to do this work, all the more, perhaps, as the trend of modern dental thought was outside of the channels he was accustomed to travel. Notwithstanding this conservative tendency of his mind, he possessed a liberal spirit, always willing to allow to others the freedom of opinion he demanded for himself.

He was deeply interested in benevolent and church work. His nature was essentially religious, and this, coupled with a thorough sympathy with the sufferings of the poor and those in need of help for other reasons, led him into charitable labor in the various institutions of New York. For most of his life he was a member and active worker in the Methodist Episcopal Church, but in recent years he became identified with the Reformed Episcopal Church.

A long life of active professional labor, combined with an excellent business capacity, enabled him to accumulate a considerable property. The exact disposition of this is unknown to the writer, but it is understood he left a large proportion of his means to church and charitable institutions.

The dental profession has lost in Dr. Lord one of its most

valued members and the general public one of its truest men, one always earnest for the amelioration of the ills of humanity and ever ready to blaze a path in the tangled mazes of a world's life for those who had failed to reap the rewards that had come to him. Reverently we lay open this noble life of our friend and colleague to the consideration of the younger generation of dentists that they may walk in his path and reap the reward that belongs always to the earnest and true-hearted in all the vocations of life.

Domestic Correspondence.

NEW YORK LETTER.

TO THE EDITOR:

SIR,—The summer months being upon us, our different dental societies here, feeling the need of rest after their long season's work, have all, with the exception of The New York Institute of Stomatology, adjourned until the autumn. A regular monthly meeting of that society met on May 6, at the office of Dr. Geo. S. Allan, and the subject was one destined to assume great proportions ere many months or years have passed, it being the dentist's relation or association to general hospitals.

Dr. Flanagan, of Springfield, Mass., was the essayist of the evening, the title of the paper being "The Hospital's Need of a Dental Staff." Dr. Flanagan discoursed at some length upon the dentist's relation and value in hospital service, maintaining that in many instances his services and special knowledge would be of inestimable value in materially assisting the general surgeon in the treatment of diseased conditions with which, by virtue of our vast experience, we have been familiar.

Papers by Dr. J. Leon Williams, of London, and Dr. Barnes, of Cleveland, sent by these gentlemen, were also read. Dr. Newton, of Montclair, a physician, being among those present, also expressed his views. All these spoke favorably of dentists working in harmony with the general medical profession for ameliorating the sufferings of the poor in hospital work.

In opening the discussion Dr. Dawbarn, who, by the way, was instrumental in having two dentists appointed on the staff of the largest hospital in New York,—the City Hospital,—spoke at some length upon the dentist's relation to the medical profession, maintaining that the dentist's relation should be akin to that of the laryngologist or any other specialist in medicine or surgery.

Dr. Gillett pointed out the possibilities in the treatment and advice that could be given to children in hospital practice which might enable them to give the proper attention to their teeth in after years, and also considered this important subject from other aspects.

Dr. J. Adams Bishop, of New York, presented a large number of interdental splints which he had made and inserted for fractured maxillæ in hospital work, in which, by the way, this distinguished authority has accomplished much, helping many unfortunate sufferers by devoting for a number of years a certain amount of his time and unquestioned skill in hospital service.

Professor Brackett, of Newport, spoke at some length upon the relation of the dentist to that of the surgeon or physician, and was listened to with great interest; and after taking a favorable view of the subject, expressed his kindly appreciation for the great interest which the general medical profession had at last taken in us, they recognizing the importance of hearty co-operation in this field. Many others also spoke, and after taking suitable action on the loss of Dr. Benjamin Lord, their honored first president, the meeting adjourned.

Some time ago I wrote in regard to an address by Dr. T. W. Brophy before a medical society, in which I was under the impression that he stated that out of six hundred and fifty cases operated upon for cleft palate, two hundred and fifty had been successful, where I should have stated that of six hundred and fifty cases operated upon, two hundred and fifty cases were performed by transfixing the bones in young children.

“LOCHINVAR.”

WHO FIRST FILLED PULP-CANALS?

TO THE EDITOR:

SIR,—Permit me to suggest that there is no warrant to give Dr. Hudson the credit of being the first to fill pulp-canals, from the fact that the treatment and filling of cases of pulp-exposure, devitalizing the pulp, and treating those cases which are already devitalized and putrescent or abscessed, is fully treated in Bourdet's "Art of the Dentiste," published at Paris, 1757, Chapter III. of the first volume, pages 114 to 132. He quotes from Fauchard, and in Fauchard's first edition, 1728, we have evidence that he also was well informed in regard to the proper methods of meeting these conditions.

Bourdet removed the pulp with an instrument, he tells us, such as watchmakers and engravers use, made of steel, and square. He directs that the temper be partly drawn for a length of about two-thirds of an inch, to prevent its breaking in the canal and to permit its being properly shaped. The end he sharpens, making it three-sided, and with this and the aid of oil of cloves, oil of cinnamon, and spirits of wine, he works down to the apex of the pulp-canal and thoroughly removes its contents. He then places in the canal a little cotton wet with the medicament, and allows it to rest until all irritation has subsided; he then fills with leaves of gold or lead. ("Lorsque la Dent ne fait plus de mal, que le cordon en est détruit, & que le canal est vuide, il faut garnir exactement la Dent avec des feuilles d'or ou de plomb, & cette Dent se conservera nombre d'années.")

He gives this method, not as something new, but expressly states that it is the usual course of procedure pursued by skilful dentists.

There is no doubt but that Dr. Hudson filled pulp-canals as intimated in the bill, and equally no doubt but that he was so taught by his uncle, as he in turn had been taught by his preceptor. I felt very sad, as a few days ago I stood beside his neglected grave, to know that all Dr. Hudson had learned during his more than thirty years of dental practice was buried in that grave with him. A born leader of men, thoroughly equipped for his life-work, socially and professionally so well qualified to have given the dental profession a masterful uplift, he gave the cold shoulder to those who were

struggling to better it, and contributed not one jot or little to make the path easier for those who should follow.

WILLIAM H. TRUEMAN.

[We are under great obligations to Dr. Wm. H. Trueman for the foregoing, but why, may it be asked, was not this important information given us before? The question has been asked repeatedly, Who first filled pulp-canals? but until now no answer. —ED.]

Miscellany.

AN EMERGENCY CROWN.—Grind the root down to the gum margin, measure the distance from the gum margin to the incisal edge of the adjacent tooth and the width of the space where the crown is missing, select the proper shade, and send to depot for a suitable facing, if you have not one at hand. While a facing is being selected enlarge the root-canal to the proper depth and adjust a post of such length that the lower incisors will not strike it as they articulate, and set back in the root far enough lingually so that it will not force the facing out of the line of the arch; flatten slightly the projecting end of the post and roughen the section to be embedded in the root; fill the root-canal with a large, soft, gutta-percha cone; heat the post, grasp the flattened end with a suitable pair of pliers, force it to its place in the root-canal, and trim away the surplus gutta-percha; slightly roughen with a coarse sand-paper disk the interproximal contact points of the adjacent teeth. The facing should have arrived by this time; grind it to fit properly, roughen the back on the facing with a carborundum wheel and bend down the pins so that they are at an angle of about forty-five degrees to it.

Dry the facing, the adjacent teeth, the post and root thoroughly, mix thickly some of Ames's quick-setting cement, coat the back of the facing and cover the end of the root and post with it, then force the facing into this mass of cement and hold it in position until the cement has set slightly; coat the cutting edge of the lower incisors and have the patient bite, then, opening the mouth, trim

away the surplus cement, clean out the interproximal spaces, and contour as you please, but leave the cement adhering to the interproximal contact points to give greater security of retention. By this time the cement is quite thoroughly set and the patient may be dismissed.

The time consumed in this operation should not be more than a half-hour if you are within three blocks of a dental depot, and you may accomplish it in fifteen minutes if you have the facing at hand.—J. E. NYMAN, *Dental Review*.

PROCESS FOR PRODUCING GOLD-LIKE ALLOY FROM COPPER AND ANTIMONY.—This invention, patented in Germany, covers a metallic alloy, to take the place of gold, which, even if exposed for some time to the action of ammoniacal and acid vapors, does not oxidize nor lose its gold color. It can be rolled and worked like gold, and has the appearance of genuine gold without containing the slightest admixture of that metal, besides being much cheaper than other precious and semi-precious metals, as well as the compounds and alloys used as substitutes for precious metals.

The alloy consists of copper and antimony in the approximate ratio of 100 to 6, and is produced by adding to molten copper, as soon as it has reached a certain degree of heat, the said percentage of antimony. When the antimony has likewise melted and entered into intimate union with the copper, some charcoal ashes, magnesium, and lime-spar are added to the mass while the latter is still in the crucible. Although the action of this material admixture of flux is not entirely explained, the alloy loses thereby a certain porosity otherwise present, and an exceedingly great density of the cast metal is obtained. It can now be rolled, wrought, hammered and soldered like gold, and when polished has the appearance of genuine gold, while being considerably firmer than the latter.—*Journal der Goldschmiedekunst, Scientific American*.

CONCEALED BICUSPID ATTACHMENT FOR BRIDGE.—Devitalize the bicuspid, and prepare canal as usual through an opening drilled in the centre of the sulcus of the tooth. Enlarge for the accommodation of 20-gauge wire (irido-platinum) and of good length. With

small carborundum stone increase the depth and breadth of the sulcus until it becomes a wide, deep groove, particularly so on the side adjoining the space for the dummy. If the dummies are to be inserted on the mesial side of the tooth, then this aspect of the tooth must be ground flat and perpendicular, straight up and down, from the occlusal edge of the tooth to a point slightly under the cervical margin. Take impression of tooth in plaster, make a fusible metal die, filling up the impressions of the adjoining teeth with mouldine before pouring the metal. Swage 30-gauge pure gold over the mesial and occlusal aspects by driving the metal tooth into a transverse section into a block of soft pine wood. Punch hole for the 15-gauge irido-platinum post, place in position on the tooth with the post in the root-canal, fasten with Parr's wax, remove, invest, and tack post with 20-carat solder. Replace on the tooth and burnish and trim perfectly, allowing the plate to lap well over the edges. A good fit and the subsequent durability of the bridge depend upon close adaptation of the gold backing, which can only be secured by burnishing and thickening with 20-carat solder. Solder on dummy, contour and finish properly, and a strong and artistic bridge pier is the result. Set with cement and finish on the tooth with carborundum stone and sand-paper disks.—H. M. KIRKE, *Dental Register*.

PERCENTAGE SOLUTIONS.—The *Dental Office and Laboratory* gives the following from the *Pharmaceutical Journal*:

For all practical purposes, in dealing with single ounces, four and a half grains is near enough to form a one per cent. solution. With larger quantities it is, of course, obvious that a higher degree of accuracy may be obtained.

The above illustration shows the superiority of the metric system where there is a direct relationship between weight and volume, which is not the case with grains and minims. One minim does not represent the volume of one grain of distilled water, consequently a solution which contains one grain of a substance in one hundred minims is not a one per cent. solution. It should be observed that true percentage solutions contain a number of parts indicated in a hundred parts of a solution, the parts being all of one denomination. A one per cent. solution really indicates one grain in one hundred grains by weight. For dispensing purposes, parts per one

hundred fluid parts are usually intended, although not distinctly stated, when percentage solutions are ordered. This would be equivalent to grains per hundred fluid grains, or 4.375 grains per fluidounce, which contains 437.5 fluid grains of water.

The symbol \mathfrak{z} really should only be used to indicate the Troy ounce, containing 480 grains. Conveniently, however, it is employed to indicate the fluidounce containing 437.5 fluid grains.

[The above article is misleading. A grain is a grain whether of a liquid or a solid. There is no such term as "fluid grain."

Again, the gallon of apothecaries' fluid measure is the standard unit of liquid measure, the wine gallon. It contains 231 cubic inches and weighs 58372.1754 grains, or nearly eight and one-third pounds avoirdupois, of distilled water at 39.83° Fahrenheit, the barometer 30 inches. Divide this number of grains by 128, the number of ounces in a gallon, and the result is 456.03 grains, instead of 437.5 grains, the number of grains in an ounce avoirdupois weight; hence 456.03 grains is the basis upon which to estimate percentage solutions for fluidounces.—McCLAIN.]

Current News.

NATIONAL DENTAL ASSOCIATION.

THE sixth annual session will be held in Niagara Falls, N. Y., July 28 to 31, 1902.

A good programme is being prepared and a large and profitable meeting is anticipated.

A rate of one fare and a third for the round trip, on the certificate plan, has been secured on all roads in the United States and part of Canada.

In purchasing ticket going, full fare must be paid and a railroad *certificate* taken; this when properly signed entitles holder to return for one-third fare.

Tickets may be bought going from July 22 to 29. The certificates for return journey may be used as late as August 4.

A. H. PECK,
Recording Secretary.

CHICAGO.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE nineteenth annual convention of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, New York, July 24 next. The Executive Committee will meet at eleven A.M., July 23.

All colleges are respectfully referred to the rule requiring that their annual announcement be in the hands of the Executive Committee at this meeting.

H. B. TILESTON,
President.

S. W. FOSTER,
Secretary Executive Committee, N. A. D. F.

PENNSYLVANIA STATE DENTAL SOCIETY.

THE Pennsylvania State Dental Society will hold its regular annual meeting at Bedford Springs Hotel, Bedford, Pa., July 8, 9, and 10, 1902.

R. H. NONES,
Chairman Executive Committee.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this Society, held at Springfield, May 13 to 15, 1902, the following officers were elected for the ensuing year:

President, A. H. Peck, Chicago; Vice-President, W. E. Holland, Jerseyville; Secretary, Hart J. Goslee, Chicago; Treasurer, C. N. Johnson, Chicago; Librarian, J. T. Cummins, Metropolis; Supervisor of Clinics, C. P. Pruyn, Chicago.

Committee on Science and Literature.—G. V. Black, Chicago.

Committee on Art and Invention.—L. S. Tenney, Chicago.

Board of Examiners.—C. B. Sawyer, Jacksonville.

Committee on Ethics.—E. A. Royce, Chicago; G. E. Warren, Pontiac; E. F. Hazell, Springfield.

Executive Committee.—Chas. J. Sowle, Rockford.

Members of Executive Council.—E. K. Blair, Waverly; D. M. Gallie, Chicago; O. M. Damude, Monmouth.

Publication Committee.—Hart J. Goslee, Chairman; D. M. Cattell, G. W. Dittmar, Chicago.

Local Committee of Arrangements.—F. M. McIntosh, J. B. Brown, G. D. Sitherwood, all of Bloomington, which city was selected as the next place of meeting.

HART J. GOSLEE,
Secretary.

CHICAGO DENTAL SOCIETY.

FOLLOWING are the officers of the Chicago Dental Society elected at the annual meeting, April 1, 1902:

President, Elgin Mawhinney; First Vice-President, H. J. Goslee; Second Vice-President, F. B. Noyes; Secretary, Winthrop Girling; Corresponding Secretary, C. S. Bigelow; Treasurer, E. R. Carpenter; Librarian, H. W. Sale; Member of Board of Directors, Edmund Noyes.

Board of Censors.—W. V.-B. Ames, Chairman; C. N. Johnson, A. W. Harlan.

C. S. BIGELOW,
Corresponding Secretary.

MISSOURI STATE DENTAL ASSOCIATION.

At the last annual meeting of this Association, held at Jefferson City, May 21, 22, and 23, 1902, the following officers and committees were elected:

President, S. C. A. Rubey, Clinton; First Vice-President, J. H. Kennerly, St. Louis; Second Vice-President, F. W. Franklin, Kansas City; Corresponding Secretary, Otto J. Fruth, St. Louis; Recording Secretary, H. H. Sullivan, Kansas City; Treasurer, J. T. Fry, Moberly.

Board of Censors.—A. M. McGee, Louisiana; R. J. Winne, Bolivar; W. M. Bartlett, St. Louis.

Committee on Ethics.—A. J. Prosser, St. Louis; W. H. Renoe, Fulton; J. B. McBride, Springfield.

Publication Committee.—Wm. Conrad, St. Louis; W. G. Goodrich, Chillicothe.

Committee on History.—Burton Lee Thorpe, St. Louis.

Committee on Inventions and New Appliances.—Sam. T. Bassett, St. Louis.

Committee on International Dental Congress during Louisiana Purchase Exposition.—Wm. Conrad, F. F. Fletcher, M. C. Marshall, Hermann Prinz, Burton Lee Thorpe, W. M. Bartlett, Leo Gregory McKellops.

Next annual meeting will be held at Kansas City, Mo.

OTTO J. FRUTH,
Corresponding Secretary.

MAINE DENTAL SOCIETY.

THE Maine Dental Society will hold its thirty-seventh annual meeting at Camden, Me., on Tuesday, Wednesday, and Thursday, July 15, 16, and 17, 1902.

H. A. KELLEY,
Secretary.

PORTLAND, ME.

AMERICAN DENTAL SOCIETY OF EUROPE.

FOLLOWING is a synopsis of the programme for the annual meeting of the American Dental Society of Europe, to be held in Stockholm, August 12 to 15, 1902, inclusive:

TUESDAY, AUGUST 12.

9.30 A.M.—Business meeting (members only), Grand Hotel.

10.30 A.M.—Meeting open to visitors. Papers.

10.45 A.M.—President's Address.

1.00 P.M.—Adjournment for luncheon at various hotels.

2.30 P.M.—Meeting resumed.

9.00 P.M.—Reception by the President and Mrs. Royce. Music and dancing.

During the day drives and entertainments will be arranged for the ladies.

WEDNESDAY, AUGUST 13.

10.00 A.M.—Papers and discussions.

1.00 P.M.—Adjournment. Luncheon to visitors by members A.D.S.E.

2.30 P.M.—Meeting resumed.

7.30 P.M.—Dinner at one of the resorts of the season for ladies and members.

Excursion for the ladies to environs of Stockholm.

THURSDAY, AUGUST 14.

10.00 A.M.—Papers and discussions.

1.00 P.M.—Adjournment for luncheon.

2.30 P.M.—Meeting resumed.

8.00 P.M.—Annual banquet.

An all-day trip will be arranged for the ladies, returning in the evening.

FRIDAY, AUGUST 15.

9.30 A.M.—Clinics and demonstrations.

1.00 P.M.—Adjournment for luncheon.

2.30 P.M.—Business meeting.

Adjournment.

L. J. MITCHELL,
Honorary Secretary.

VIRGINIA STATE DENTAL ASSOCIATION.

THE Virginia State Dental Association will meet at the Hygeia Hotel, Old Point Comfort, Va., August 5, 6, and 7, 1902. Visiting dentists will receive a cordial welcome.

J. HALL MOORE,
Corresponding Secretary.

THE International Dental Journal.

VOL. XXIII.

AUGUST, 1902.

No. 8.

Original Communications.¹

"THE BURNISHED-CAP-CROWN."²

BY DR. P. B. M'OUULLOUGH, PHILADELPHIA.

MR. PRESIDENT, I have the honor to offer for the consideration of this Academy a description of the method for making "The Burnished-Cap-Crown."

PLATE I. For the best application of this system a set of instruments are required consisting of eighteen impression-tubes like Figs. 1 to 5, each provided with an ejector; a handle having two curved bite plates attached, and four sockets at different angles for the reception of the nozzle end of the tubes. (Fig. 6.)

A swaging device in two parts, consisting of a mandrel (Fig. 7) and a matrix plate (Fig. 8), the latter serving also as a model support, Figs. 6, 7, and 8 being sectional views.

Preparatory to crowning any of the upper six anterior teeth, the root is ground slightly below the gum margin following the festoon; this will give a curve mesio-distally and a straight line labio-palatally; if any enamel remains it is chipped off and the root bevelled with a cone bur.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Academy of Stomatology, Philadelphia, December 27, 1901.

The impression-tube best suited to the case is selected, placed in the socket in the end of the handle provided for the upper anterior teeth, filled with zinc phosphate, and pressed to place upon the root, care being taken that the tube be held fixed until the cement becomes hard.

By holding the tube together with a corner of a piece of paper the size of a prescription blank between the thumb and fingers of one hand, and turning until a cornucopia is formed which when bound with waxed thread and trimmed with scissors until walls have a depth of a quarter of an inch around impression, constitutes the matrix. In the pocket thus formed is dropped from tweezers a mixture of prepared chalk in dilute sandarach, in the proportion of one-third precipitate when settled and immediately shaken off, so as to form a very faint and even coating over the impression. When cement mixed thick is packed in the matrix. After unwinding the string and paper the model and impression are pulled apart, the two being readily separated.

PLATE II. After trimming the model (Fig. 1) with a coarse corundum stone dry without injury to that part, reproducing face of root and bevel, it is waxed to the flat surface of the model support. A piece of 36-gauge platina plate is then held firmly upon the face of the model with the thumb of one hand and the edges turned down on the bevel with the blade of a No. 8 ball burnisher in the other, until an approximately fitting cap is formed. This is then laid aside, and a gold band of 22-carat, 28-gauge, one-eighth of an inch wide, cut with angular ends, is measured around the model, the ends soldered and shaped upon the model, the cap annealed, returned to place, the band pressed over cap, drawing it tight to bevel, when both are removed adherent and soldered together from the side to which the porcelain is to be adjusted, using sufficient solder to cover the cap. (Fig. 2.)

The extended platina edges are then cut away, the part fitting under the gum bevelled, the surface to which the porcelain is to be fitted filed flat at an angle, so that the band will be widest on its palatal and narrowest on its labial face. (Fig. 3.)

From seven-eighths of an inch of No. 18 iridio-platina round wire the dowel is made by filing flat at an angle one side extending from the end one-fourth of an inch; this is cut off and clamped to the five-eighths-inch piece, flat side in, soldered, and filed to the shape of a flattened obelisk.

PLATE I.

FIG. 1.



FIG. 2.

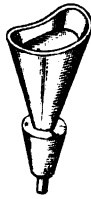


FIG. 3.



FIG. 4.

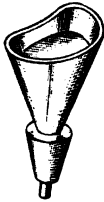


FIG. 5.

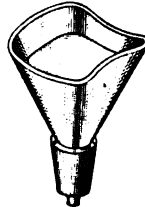


FIG. 6.

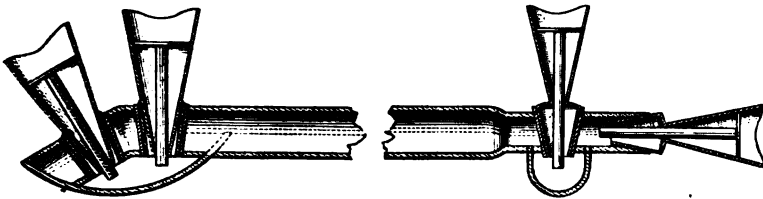


FIG. 7.

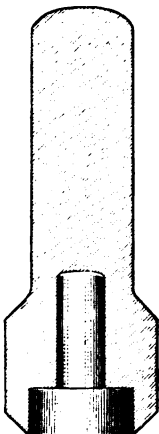


FIG. 8.

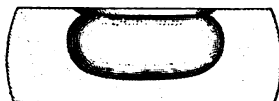


PLATE II.

FIG. 1.

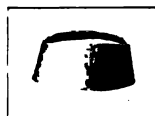


FIG. 2.

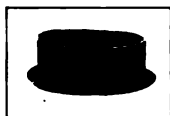


FIG. 3.



FIG. 4.



FIG. 5.



A hole punched in the centre of the cap is filed to shape of dowel large enough to admit the latter for half its length, so that the edges of the hole may not be turned back when the dowel is forced to place.

Thus the two sections are ready to be placed in position upon the root, when, by virtue of the particular shape of the dowel and the cap stiffened with solder, they are withdrawn adherent and soldered without investing and returned immediately to place for the impression in plaster, with, preferably, No. 20 tray.

After the facing has been ground flat to fit the cap, and before the cut pins are split to secure the thick platina backing, No. 20 or 60 pure gold should be caught by an edge between the backing and the tooth and smoothed over the ground end fitting the cap, to protect the porcelain from borax and reflect a better shade at the joint.

From this point the crown is finished after the accepted methods. (Fig. 4.) Usually, as a guide for fitting facing, the correct length of the crown is measured by touching a straight line connecting the cutting edges of the two adjacent natural teeth.

For the lower bicuspid the root is ground flat rather than following the festoon of the gum,—although this is optional,—and bevelled. The impression is taken with the tube in that socket of the handle at a right angle to its length.

When placed upon the root the patient is directed to close on bite plate, with sufficient pressure to assist the operator in retaining the tube fixed until the cement becomes hard. Thereupon the procedure is the same in detail as described for the incisor up to the point where the cap and dowel soldered have been returned to the root. A mix of plaster is then piled upon the cap and neighboring teeth and the patient directed to close, holding the jaws fixed until the plaster sets.

Should the plaster break upon removal it can be held together until freely coated with shellac and sandarach and both sides filled with plaster. Then by cutting away the impression-material until the teeth are exposed, the model may be pulled asunder. Thus the return of the fractured parts insures an accurate model and bite.

The use of a saddle-back tooth makes this typically a lower bicuspid crown. (Fig. 5.)

One detail worth observing is that the backing be made to extend straight out all around, except where adjusted to the cap, so that by drawing the solder over a greater area a more perfect

contour is attained in finishing and a fault in the shape of these teeth partially overcome.

PLATE III. For the upper bicuspid the root is ground flat and bevelled, handling the tube as described for the incisor or lower bicuspid and following in detail the work as stated for these two crowns up to the burnished cap. Then a piece of 22-carat gold, 28-gauge, three-sixteenths of an inch wide, is cut curved, with ends forming an acute angle with the convex edge (Fig. 1), so that when measured around the model and the ends soldered the ferrule will have a greater diameter at one end than at the other and set flat upon either edge.

After fitting the smaller end to the model the cap is placed upon the latter and the ferrule or band, as fitted, pressed to place, the sections removed adherent, and soldered. The section is then returned to the model, the walls pressed out mesially and distally for approximal contact, and in imitation of the outline of a natural bicuspid, as seen looking towards its occlusal surface.

With dowels made as described for the other crowns, and holes made in the cap, if a bicuspid with two canals, it is placed upon the root, observing that the edge of the band touches the tooth front and back of the space. One dowel is then pressed to place, removed with the cap, soldered, and the operation repeated for the other.

If the edge of the band on the palatal surface extends out of line of the adjacent teeth it is cut out, forming a curve to the depth required, beginning mesially at the point of juncture of the palatal with the mesial wall, and terminating at an opposite point distally. (Fig. 2.) If out of line on the buccal face, it is split, the edges lapped and pressed into alignment while upon the root. The band is then filled to excess with zinc phosphate and the patient directed to close the mouth, while the operator marks a straight line on the cement connecting the buccal cusps of the two adjacent natural teeth, thus marking the lateral occlusion, which, together with the bite, constitutes the articulation.

The excess of cement is then ground off with a coarse corundum stone, dry, and the cusps carved after a natural bicuspid, exposing the edge of the band all around (Fig. 3), when it is embedded in hard wax in the mandril section of the swaging device, leaving the cement and edge of the band exposed.

Over the modelling clay or mouldine filling the hole in the matrix plate is laid a piece of gold 22-carat, 28- or 30-gauge, and

PLATE III.

FIG. 1.

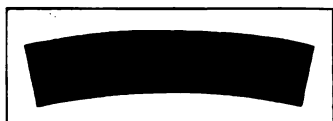


FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.



FIG. 6.



FIG. 7.



PLATE IV.

FIG. 1.



FIG. 2.



FIG. 3.

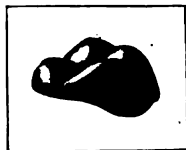
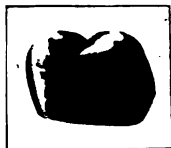


FIG. 4.



the cement cusps held upon the centre and driven into the gold with horn mallet, annealing, trimming, and pressing the mouldline back in the plate as required, until the swaged section is formed to the model and to the edge of the band. (Fig. 4.)

The wax is then softened, the section embedded removed, a flame from the blow-pipe directed on the cement, which is immediately dropped in hydrochloric acid and repeated, if necessary, until the cement is destroyed.

The cusp section, pickled and stiffened with 20-carat solder, is wired and soldered to the band which it will fit as swaged by virtue of the curve in the cusp section corresponding with the curve in the band.

Thus a hollow crown is formed, the buccal face of which is sawed out and the remaining shell filled with 16-carat solder over a Bunsen flame. (Fig. 5.)

Flat surfaces are then filed to receive the facing, the ends of which are ground flat at the required angles to fit the space, after the fashion of an inlay, and backed with pure gold with the ends extending beyond the sides of the facing, and held by splitting the previously cut pins. The facing is then wired in place, protected with four-ply asbestos cloth, wired, wet and packed with the fingers. (Fig. 6.) Upon one end of the extended backing is placed 14-carat solder and held over a Bunsen flame with facing downward, at an angle so as to favor the gravitation of the solder, when melted, through the small space between the backing and the body of the crown to the other side.

The only facing made fit for this crown is one having thick, flat, angular ends. By a fault of them all being too long to imitate a natural crown, and their little shape destroyed by grinding, it is often necessary to have the porcelain extend out beyond the gold, forming the buccal cusp, so that when finishing the natural curve may be formed from the point of the cusp to the edge of the cap. (Fig. 7.)

The lower molar is ground, curved, following the line of the gum, and bevelled, the tube fixed in one of the two sockets in the handle provided for the molars, and the operator assisted by pressure of the upper teeth on the bite plate while taking the impression.

The detail of construction is the same as described for the upper bicuspid, up to the point where the cap and band are soldered together. With this section in place on model, the free edge of the

band constituting the walls of the crown is pressed out all around after the outline of the natural tooth as seen looking towards its occlusal surface.

It may be observed that the walls of a natural lower molar crown diverge from the line of attachment of the enamel to the cementum for two-thirds its total depth on the mesial, lingual, and distal surfaces, and one-third on its buccal face; thus the converging lines terminating in the cusps form two-thirds the depth of the buccal face and one-third of each of the other three surfaces.

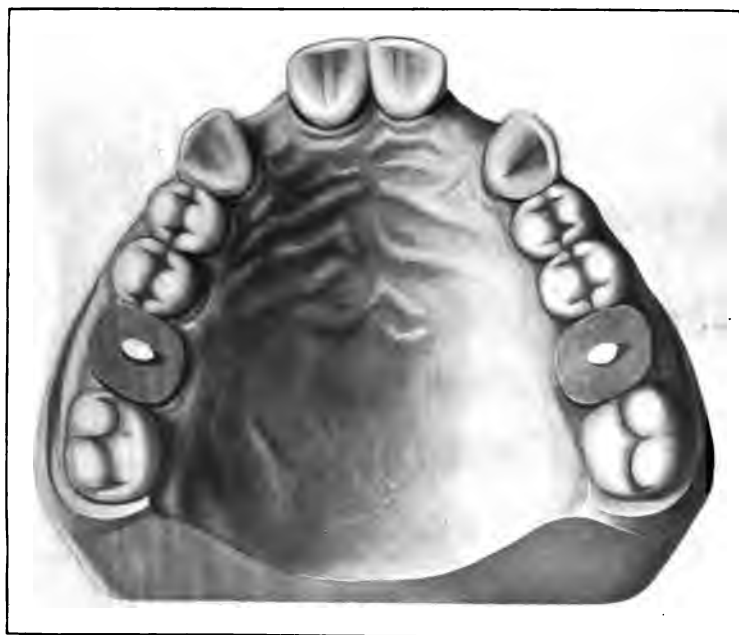
The gold section, constructed to the point described, has a band of equal width all around, representing two-thirds the depth of the finished crown. In order that all converging lines may be formed in the cusp section, half the depth of the band is cut out on its buccal face, forming a curve extending from the point of juncture of the mesial with the buccal wall and terminating at an opposite point distally. (Plate IV., Fig. 1.) In this "curve of contour" lies the secret of the perfectly contoured crown. This section is then placed upon the root, and if the space is normal the free edge of the band should touch the approximal surfaces of the adjacent natural teeth, thus forming the interdental space; then the band is filled with an excess of cement and the patient directed to bite. The cement forced out by the occluding teeth is ground off and the piece returned to the root; the patient is then directed to bite laterally, while the cement is ground in the mouth until the proper lateral occlusion is attained.

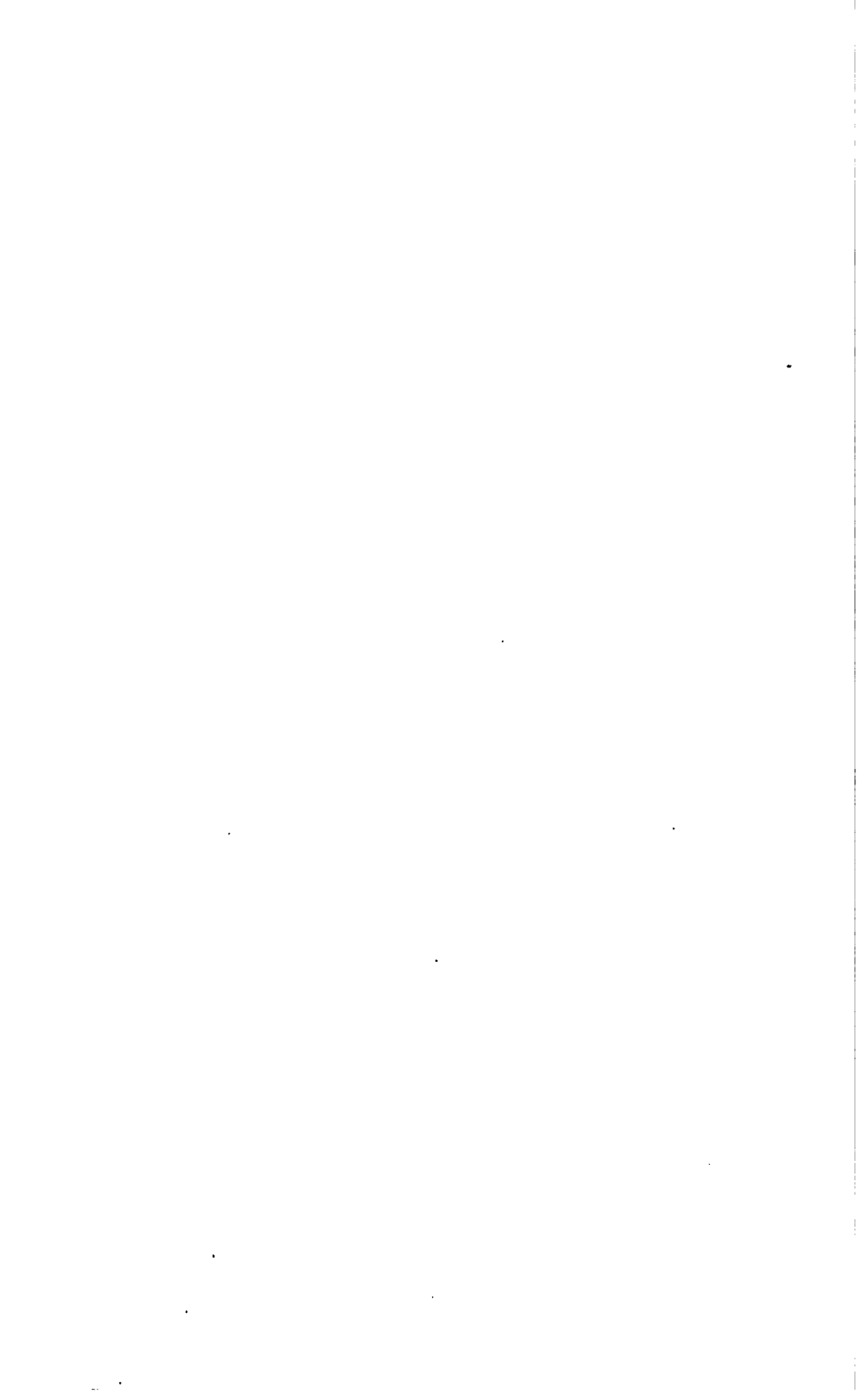
After carving the cusps (Fig. 2) the section is waxed in the mandrel and the swaged section (Fig. 3) formed, after the manner described for the upper bicuspid.

Before soldering the cusp section to the band the centre of the platina cap is cut out with a plate punch and filed, leaving an edge extending from the inside of the band a sixteenth of an inch all around. The object of this cap in the molar crown is to strengthen the crown at its bevelled edge and to serve as an absolute guide in "forcing" the crown to place upon the root.

This description answers for the upper molar, excepting that the band is not pressed out on its buccal face, and the curve in the band is cut on the palatal surface as described for the buccal face of the lower, and the lateral occlusion is marked in the cement by drawing a straight line connecting the buccal cusps of the two adjacent natural teeth.

PLATE V.





The drawings for the telescoping crown (Plate V.) illustrate a practical case as finished, showing the cap and post section cemented upon the root of each of the upper first molars, and the telescoping section soldered to a gold plate, supporting two lateral incisors.

The Telescoping Crown.—The root for the upper molar is ground flat and bevelled, the walls of the pulp-cavity made parallel, in which, to provide the necessary anchorage, is fitted a tube approximating the shape of the cavity walls and resting on the floor of the cavity, with the other end extending beyond the edge of the root a sixteenth of an inch. The tube is then set with plaster, the latter trimmed flat and even with the ground edge of the tooth, with the tube extending out of the centre. An impression is then taken with cement, with the proper impression-tube, withdrawn with tube embedded, wrapped with paper forming a matrix, coated with separating medium, and packed with cement. When the impression-material is cut away the tube will be embedded in the cement model and extending out of the centre as out of the pulp cavity in the mouth.

With the model waxed to the model support, a hole is cut in the centre of a piece of 36-gauge platina plate large enough to admit the extending end of the tube and rest flat on the model; the tube is then filed off flush with the platina cap and the latter turned down on the bevel of the model with a burnisher. A 22-carat gold band, 28-gauge, an eighth of an inch wide, is then measured around the model, the ends soldered, shaped upon the model, and pressed to place over the platina cap, drawing it tight to bevel. The cement model, holding the tube, cap, and band, is then placed upon the block and the three sections soldered together. A piece of 28-gauge, 22-carat plate is then fitted on the cap inside of the band, soldered, and the entire surface filed flat, including the edge of the band, thus forming a solid flat gold covering over the platina cap. The cement is broken up with fire and acid, when the section is ready for the patient. If a case like the one illustrated, then, of course, the operation as described is duplicated.

With both sections placed upon the roots, an impression of all the teeth is taken in plaster, the sections placed in position in the impression, and a model made with plaster and sand. A plaster model is made from a plaster impression of the lower jaw and both models fixed in an articulator.

A method for forming the telescoping tubes, the inner constituting the finished post and the outer a part of the movable section, may be done by cutting a piece of clasp gold, 30-gauge, measuring half an inch square, and shaping on a round instrument of suitable size until two edges meet; when soldered this will give a tube of even diameter throughout. Around this a piece of the same metal one-quarter of an inch wide, long enough for the ends to meet, is moulded and the edges soldered; the two are then forced together and a round instrument, smaller than the inner tube, is placed inside and the outer tube struck with a mallet until slightly flattened; this will prevent the tubes turning one upon the other, and by shaping them together their sliding property will not be destroyed.

Each inner tube is then adjusted upon the centre of the cap on the investment model at any angle conditions might suggest, but they must be absolutely parallel; they are then waxed, held with investment material, and soldered to the cap. The tubes are then ground to fit the irregular surface of the occluding plaster tooth, the telescoping tubes placed over the first and likewise articulated. A gold band to form the walls of the finished crown is then shaped and fitted to the edge of the cap, the latter covered with thin paper to prevent the wax adhering, and the bottom of the space between the telescoping tube and the band constituting the walls of the crown is covered with hard wax, thus uniting the two. The "curve of contour" is then cut in the palatal face with a stone, the band filled with an excess of cement, and the articulator brought together. Slip off the telescoping section, carve the cement, and expose the edge of the tube in the centre of the occlusal surface, and the edge of the band all around; fix in the mandrel and swage the cusps, cutting out the centre to the edge of the tube. Then remove from the mandrel, clean off the wax, and solder the cusp section to the tube and to the band; pickle to remove the cement, and then fill the space between the tube and the walls of the crown with low-carat solder. The crowns are then set with cement in the mouth, and the swaged plate held in position, while a plaster impression is taken of one crown and a part of the plate, then invested, and the telescoping section and plate soldered together; the operation is repeated for the other side. Then an impression is taken for mounting the teeth.

In the tube, to provide anchorage, fitting the pulp-cavity, were

drilled a number of holes to afford an even distribution of the cement in forcing the crown to place. Inside the tube constituting the post a hole was drilled through the cap to afford escape for excess cement, and after setting, the tube was filled with cement and covered on the exposed occlusal surface with amalgam.

The principal upon which this crown is made applies alike to every tooth in the mouth; for bicuspid and incisors the post upon which the telescoping section rides is made by soldering together two pieces of square iridio-platina wire, which may be separated at the free end for "spring," but in every case, to be typical, the post must extend through the crown to the occlusal surface. In an incisor crown the post would run next the backing of the facing.

A CONTRIBUTION TO OPERATIVE ORTHODONTIA.¹

BY EUGENE H. SMITH, D.M.D.²

MR. PRESIDENT AND GENTLEMEN OF THE ACADEMY,—Of the four cases which I shall present to you this evening, the first two are from my private practice and the last two are from my orthodontia clinics in the Harvard Dental School, and are, I think, interesting inasmuch as they show the good results obtained by the use of intermaxillary elastics in connection with expansion wires and reciprocal anchorage, and also as a study of that debatable question,—namely, "The Jumping of the Bite."

The use of elastic rubbers with occlusal and reciprocal anchorage has for a long time been used in the correction of various forms of irregularities of the teeth, but the application of elastic rubbers with reciprocal anchorage, in the manner I have used them in three of the cases which I am about to show you, was, so far as I know, first made by Dr. H. A. Baker in the case of his son, and reported in "Angle," page 254.

CASE I.—From my private practice. Patient, young lady, aged sixteen years. The nature of the irregularity is shown in

¹ Read before the American Academy of Dental Science, Boston, February 5, 1902.

² Professor of Orthodontia in the Harvard Dental School.

Fig. 1. In this case it seemed wise to widen both arches and carry forward the anterior teeth. For this purpose the usual expansion wires were used, and the result is shown in Fig. 2, which shows the two models open and in comparison, and in Fig. 3, showing the closed model and the present relation of the teeth, which condition, while presenting a pleasing appearance, is lacking in a normal occlusion.

As the necessary force in this case had to be outward in both the upper and lower teeth, the use of intermaxillary rubbers were contraindicated, but they could now be applied in an attempt to jump the bite forward, and the result would clearly indicate whether the change of occlusion would be obtained by any change in the glenoid cavity, or from a slight tipping of the teeth. Unfortunately for the further study of this case, the patient is away for the winter, and further regulating cannot, for the present, be done.

Fig. 3 also shows the present relation of the teeth.

CASE II.—From my private practice. Girl, aged thirteen years. The nature of this irregularity is shown in Fig. 4. This irregularity required for its correction the retraction of the superior anterior teeth, widening of the arches, and the jumping of the bite forward. The appliance consisted of expansion wires on the teeth of both jaws and intermaxillary elastics. The result is shown in Fig. 5, also in Figs 6 and 7, showing the palatal aspect of Figs. 8 and 9 in comparison. Fig. 9 also shows the present relation of the teeth which lack the normal occlusion.

In the treatment of this case the teeth were purposely so fastened to the expansion wire as to prevent tipping, and the result shows that the lower jaw was brought forward very little, if any, and further, that the posterior anchorage teeth were not elongated nor tipped in the slightest degree.

CASE III.—From the orthodontia clinics of the Harvard Dental School. Patient, boy, aged thirteen years, whose picture in profile you see on the screen. (Fig 10.) He was first seen by me in October, 1901, and assigned to a Senior student.

Fig. 11 shows a front view of the patient.

Fig. 12 shows a plaster model of the teeth and the condition before treatment, which is, as you see, a marked protrusion of the anterior teeth and an abnormal occlusion.

Fig. 13 shows the palatal aspect of the case. The first molars

FIG. 2.



FIG. 1.



FIG. 4.



FIG. 3.



FIG. 6.



FIG. 7.



FIG. 5.



FIG. 8.



FIG. 9.

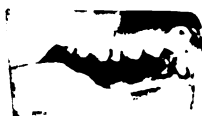


FIG. 10.



FIG. 11.



FIG. 12.



FIG. 13.



FIG. 14.



FIG. 15.



FIG. 16.



FIG. 17.



FIG. 18.



FIG. 21.



FIG. 20.



FIG. 19.



on both jaws had been extracted and the spaces somewhat closed. The appliance used was expansion wire on the teeth of both jaws, banding the four second molars. On the upper the wire was threaded as far forward as the cuspids, and a sliding sleeve propelled by a small nut fixed in position. Resistance was strengthened by ligating the wire to all of the teeth save the second bicuspid, which were carried back by the force of the sliding sleeve to which they were ligated. The first bicuspid and cuspid were treated in the same way, and at the same time the arch was widened by the force of the band springing outward. On the lower, the anterior teeth were carried forward by various adjustments of the ligatures. Fig. 14 shows the lingual aspect of the case before treatment. At this stage intermaxillary elastics were fastened back of the lower tubes attached to the bands on the second molars and carried forward and ligated to the expansion upper wires at a point near the cuspids. In about four weeks this force retracted the protruding incisors and settled the teeth in good occlusion.

Fig. 15 shows the palatal aspect of the finished case.

Fig. 16 shows the lingual aspect of the finished case.

Fig. 17 shows the front view of the models before and after treatment.

Fig. 18 shows the profile view of the model after treatment.

Fig. 19 shows a picture of the patient, front view, after treatment.

Fig. 20 shows a profile view of the patient after treatment.

A study of this case leads me to believe that the change that has taken place in the relation of the teeth to each other is to be found in the movement of the teeth in their alveolar socket, rather than in the glenoid cavity of the jaw.

CASE IV.—From the orthodontia clinics of the Harvard Dental School. Patient, young man, aged twenty-two years, whose picture you see upon the screen. (Fig. 21.) This patient was seen by me in October, 1901, and assigned to a Junior student.

Fig. 22 and the picture upon the screen show a case of pronounced prognathism in connection with a contracted and V-shaped upper arch, and is much like a case referred to in "Angle," page 179, in the following words:

"Double Resection of the Maxilla.—Several years ago the author became convinced that no operation depending upon tooth movement alone could establish proper relations of the teeth or

materially improve the facial lines in certain cases of pronounced over-development of the inferior maxilla. It seemed to him that such cases might be successfully treated by the removal of a section of bone from each of the lateral halves, although the operation was not contemplated except as a remedy for the most aggravated conditions."

I do not claim that in this case we have made much, if any, change in the facial lines, so far as they relate to the over-development of the lower jaw, but we certainly have established proper relations of the teeth and improved the facial lines by the change produced in the upper arch.

On the upper jaw the first molars were missing and the second molars were in contact with the second bicuspid. On the lower jaw the first molars were missing, leaving a slight space between the second molars and bicuspid.

The appliances used to correct the deformity were expansion wires on the teeth of both jaws, using the second molars on either jaw for the bands and tubes into which entered the ends of the expansion wires, which were threaded and carried four nuts, which were placed on the wires in front of the band tubes. The anchorage was made reciprocal by the use of the intermaxillary elastics, and so attached to the wire as to exert a force outward on the upper teeth and backward on the lower teeth and jaw.

At one stage of the process it was found that the lower incisors were tipping in to the extent of carrying their roots out through the alveolar process, and to obviate this a double expansion wire was used, the second or lower wire bearing on the incisors near their necks, while the first or upper wire impinged near the cutting edges. The teeth were ligated to these wires with silk ligatures, which were changed every two or three days, and force applied here and there as needed. The first and second bicuspid and cuspid on the lower jaw were retracted by the use of the sliding sleeve and nut on the expansion wires. Figs. 23 and 24 show a condition of the occlusion during the process of treatment which was remedied by grinding occluding points and by elongating the anterior teeth.

At the end of May the glaring deformity had been corrected, and the pictures which we now throw upon the screen show the results. Fig. 25 shows the palatal aspect of the case before and after treatment.

FIG. 22.



FIG. 24.



FIG. 23.



FIG. 25.



FIG. 26.



FIG. 27.



FIG. 28.



Fig. 26 shows the front view of the models before and after treatment.

Fig. 27 shows the profile view of the model, completed case.

Fig. 28 shows the picture of the patient after treatment.

The study of this case also leads me to conclude that the change made was in the teeth and not in the temporo-maxillary articulation.

In the handling of the two cases from the clinics I had the valuable assistance of Dr. Lawrence W. Baker, assistant in orthodontia in the Harvard Dental School, who, besides seeing the cases with me on every Saturday throughout the course, also saw them on Mondays and Thursdays of each week. I am also indebted to Instructors Cross and Chute for their oversight in the construction of appliances and in the keeping of the records. In the cases from my private practice, I was assisted by my associate, Dr. Haley.

PHYSIOLOGICAL RESULTS OF OPERATION FOR CLEFT PALATE.¹

BY DR. THOMAS FILLEBROWN, BOSTON, MASS.

My paper to-night is very brief, for the reason that this matter has been discussed here sufficiently for every member of the Academy to understand what I do, how I do it, and what I do it for. All I have to present now are the results. I have four patients present. I hope to have another, but the difficulty of getting patients of this description together for any one date cannot be fully realized until it is tried. I fully expected to have here a young boy on whom I operated at six years of age, the pictures of whose mouth and lip you have seen here, and which were published in the *INTERNATIONAL DENTAL JOURNAL* of September, 1898. His family have lately moved away, and that has made it impossible for him to be here. His is one of the most remarkable—I should say the most remarkable case I have ever had, because there was so much to overcome,—an absolutely disabling deformity

¹ Read before the American Academy of Dental Science, February 5, 1902.

of the lip with an exceedingly large cleft in the mouth. The boy is talking plainly to-day. The patient's upper lip, while long enough, was so narrow that it was absolutely immovable by any muscular power he possessed. The operation on the lip consisted of widening the lip by taking a portion of the cheek at each corner of the mouth and transferring it to the lip, making the lip broad enough so that he could project it in speaking and raise it so as to show his teeth, and command it to whistle.

The lips have much to do with pronunciation. The patient who has simply a cleft of the palate to be closed, and uses his lips with any degree of skill, can talk without difficulty, but the person who has a cicatrix in the lip and cannot use it at all has much greater difficulty to overcome. But even those patients who have large cicatrices, if their lips are put into proper form and are properly educated in use, are able to overcome that difficulty to a degree that is surprising to one as great an optimist as myself.

Some of these patients were operated on at the clinic of the Harvard Dental School and some of them are private patients, but I wish to say that whether the patients are private or clinic, this work is all the outcome of the surgical clinic of the Harvard Dental School, and but for that clinic I do not believe I would have the pleasure of presenting them here this evening. The credit of it all belongs to that institution.

Fig. 1 shows the mouth of a patient I will first present as it was before the operation. I have no model of it since the operation of the palate as complete. The patient is wearing an artificial set of teeth held by atmospheric pressure. The teeth were so elongated and out of position that it seemed unwise to attempt to preserve them. This lady was forty years old when I operated on her mouth and closed the cleft. Previous to that her enunciation was extremely indistinct, so that she could be understood only by persons knowing what she meant by the sounds she made. She is a dressmaker and a little hard of hearing, and of course makes no pretence to skill as a public speaker. The especial point I wish to be appreciated is the advanced age of the lady when her mouth was operated on, and notice that to-night she is speaking so plainly as to be perfectly well understood, when before it was impossible for a stranger to understand her.

(The patient appears and repeats the Lord's Prayer and answers questions.)

FIG. 1.



FIG. 2.



FIG. 3.



FIG 4.



FIG. 5.



FIG. 6.



FIG. 7.





Dr. Werner.—How long ago was this operated on?

Dr. Fillebrown.—A year ago last August. I subsequently took out the teeth because I could not obtain any reasonable result with them in.

Dr. Werner.—Can she talk as well when she has not her plate in?

Dr. Fillebrown.—She shows only the difference that any person does who wears a plate.

Figs. 2 and 3 show the mouth of a child nine years old before and after operation. The operation was done two years ago. Within three or four days after the operation, when the swelling had begun to subside, I began to talk to her, and I found that under my direction she could speak about as plainly as she does now. She will tell the society something about where she lives, etc. (She gives her address, repeats poetry, and answers numerous questions with normal distinctness.)

Dr. Brackett.—Will you state the condition of the patient previous to the operation?

Dr. Fillebrown.—Fig. 2 shows it very nicely. The cleft included the soft palate and extended a little into the hard palate.

Dr. Meriam.—What was the age of the patient at the time.

Dr. Fillebrown.—She was nine years old.

(Patient speaks up: "I am eleven years old now.")

Dr. Fillebrown.—You see how active her lips are when articulating; that accounts for the perfection of her speech. I think you must feel there is no question about her speaking so as to be understood.

I have two cases here which were operated on quite recently. They are not perfect in speech. I do not present either one of them as such. I present them to show you the immediate results that are gained in extremely bad cases.

Figs. 4 and 5 show the mouth of a young lady eighteen years old. I operated on her palate last July. The lip presented a deep notch, and the left nostril was very broad and lay almost flat against her face. Last August I corrected this deformity. This photograph of the patient shows what the lip was before the operation, and now we present the lip itself. This case was not finished until the 26th of August, so that it is only six months old. You will notice the cleft extended from the uvula to the lateral incisors. It is all closed up now. You will also notice in this, as in every

other case, that *s* is the only hard letter to manage. Almost all the patients get over the trouble by minimizing the sound of *s* by a sort of skipping over it. This patient has not yet learned how to do this, and I doubt if she will ever need to, for I think she will entirely conquer the sound after a little. The soft palate is flexible and growing more and more so every day.

(Patient repeats different couplets, among them, "Theophilus Thistle the successful thistle sifter," etc.)

Fig. 6 represents the mouth of a young man twenty-three years old before operation. Fig. 7 shows the same mouth as it is at present. The cleft you will notice is very wide and the arch of the mouth is high. This latter circumstance is favorable to the operation. This patient previous to my operation called on experts, both dental and medical, and was told by all, so he says, that no man living could close the cleft surgically. I wish only to say that I present the patient with the cleft closed, and the man that did it still lives. The nose and lip were in very much the same condition as those of my last patient. I operated on the lip and nose the same as in the previous case. I made two operations for the closure of the cleft, the first on the hard palate, the second on the soft palate some weeks later. There is still an opening about one-thirty-second of an inch wide by one-eighth of an inch at the junction of the two palates to be closed up. (This opening has subsequently been closed by three applications of strong carbolic acid.) His speech was more indistinct than that of these other patients. The patient has worn a small obturator to cover this opening, so that his speech has progressed the same as if it was entirely closed up. The surgical operations were completed last summer.

(To the patient.) When did you have the first operation?

Patient.—I had the first operation on the mouth the 19th of last February, nearly a year ago. I had the last operation the 11th day of last June, and I am yet to have one more, which I think will prove successful, and I expect to be far better than I am now.

Dr. Fillebrown.—If you choose to take the time, he would be very glad to have you look at his mouth. He talked with me over the telephone the other day, and I did not realize there was any trouble with him at all. In the course of the talk there was just one word I could not understand. and that was congress, and I

answered back what I thought it was, and he did not understand me, so we were even.

Dr. Smith.—I would like to ask Dr. Fillebrown if the young man wore an obturator before the operation?

Patient.—No, sir, I did not.

Dr. Fillebrown.—You will see in these patients the effort that is made to use the lip. By that means the good articulation is obtained; without that it would be difficult to understand them.

A member.—Is your speech a good deal improved now over what it was two years ago?

Patient.—Yes, wonderfully.

A member.—Was it hard to make people understand you then?

Patient.—Yes, very hard. I find a large improvement already. I expect more as time goes on. I have no trouble, hardly, now in making them understand me.

Dr. Baker.—I would like to ask Dr. Fillebrown what vocal instructions the patient has had?

Dr. Fillebrown.—I have given him what he has had.

Dr. Baker.—What you gave him?

Dr. Fillebrown.—Yes.

President Bradley.—How frequently have you given him instructions?

Dr. Fillebrown.—A dozen times. (Patient: "Hardly so many, I think.") He was able to do as I told him between times; that is, to bring the tone up behind the soft palate, make the tone up in the head where it belongs, and use the lips to articulate with, particularly the upper lip. Following those two things, patients will be sure to get good articulation that can be heard readily, understood readily, and can be delivered without special effort. I gave him exercises to use that would surely carry the voice there every time.

President Bradley.—Do you use any diagram as to how to place the tongue?

Dr. Fillebrown.—No sir; the tongue will take care of itself if you give the right word to pronounce.

Dr. Werner.—Does he wear an artificial denture?

Dr. Fillebrown.—No, sir. You will notice two of the teeth are very short. These two were cut off and some crowns put on.

President Bradley.—Does Dr. Fillebrown wish to add anything to his paper?

Dr. Fillebrown.—I will say that I wish some member of the Academy who is an impartial observer would make such comments on these statements and as to what the patients have done as may appear proper to him. I prefer not to add any opinion of my own, and there is no time for discussion to bring it out.

THE VALUE OF THE WENKER RUBBER JAW AS AN AID IN TEACHING THERAPEUTICS.¹

BY HARVEY N. JACKSON, D.D.S., MILWAUKEE, WIS.

THE Wenker rubber jaw has been so helpful to me in my work with students, and the possibilities that suggest themselves seem so great as I continue in its use, that I feel that I should call the attention of teachers in this branch of dentistry to its advantages, not only as a means whereby the technic of the application of remedies can be nicely shown, but also as a means to keep the class interested, and as a rest and change from the ordinary manner of lecturing.

It may be advantageously used in teaching the removal of calculus, the different instruments used, and their manipulation in removing deposits in the most effectual way with the least discomfort to the patient; to illustrate the use of cups, brushes, and floss-silk in polishing the teeth; in the treatment of putrescent teeth, as to the shape of the cavity, the opening of the pulp-chamber, the exposure of the chamber floor, the mouths of the canals, and gaining free access thereto, followed by the actual employment of the medicinal agents, showing the use of broaches, canal reamers, etc., and, in fact, every step in the process of treating teeth can be demonstrated nearly as well as it can be in an actual clinic in the mouth; the application of a devitalizing agent; the ways and means of properly sealing the agent in the tooth to get the best results and prohibit its escape to the gum tissue; the different means employed to safely confine the agent in badly broken down teeth, as the use of cement, the application of rubber tubing, Kirk's method of enveloping the tooth with adhesive plaster, or the

¹ Read before the Southern Wisconsin Dental Society, May, 1902.

use of the celluloid matrix as a retention wall, and so on through the list; the manner of applying and operating with mummifying agents; the presentation of pulp exposures, with the different methods of capping; the use of the pressure method with cocaine for the painless extirpation of pulps.

The ordinary method of treating abscess with fistulous opening by pumping an agent through the opening, or forcing through with syringe and rubber stopper, can be illustrated fully as well, I believe, as at the chair-side. To this end I have made a slit through the alveolar wall in the rubber jaw, at a point where the fistula usually exhibits itself; then, reaming the canal in an incisor tooth and drilling a hole through the apical end, I passed a string through the tooth, then down through the socket, and out of the slit representing the fistula. The tooth was then set with thin cement and the string withdrawn before the cement had hardened, thus preserving the opening. The several modes of procedure for forcing medicaments through the fistula can now be nicely exhibited.

The reaming of canals with the stubbed Detroit broach for the treatment of improperly so-called blind abscess can also be shown to advantage.

Several jaws can be filled with extracted teeth and thus enable the instructor to place before the class a large number exhibiting the different forms and conditions as they come to us in actual practice, and all this can be exemplified with the teeth practically *in situ*, which I have found much better than using the single teeth out of their normal position.

A table clinic can be given as often as seems necessary during the course of lectures; it helps to keep the students interested in what many of them find to be a dry subject, and they will get a much better understanding of the subject from the lectures by its use.

But the chief benefit gained for the student lies in the fact that it enables him to use his knowledge of therapeutics in a practical and intelligent way when the time of need comes.

My experience with students in the office and in college classes has been quite sufficient to teach me this truth: that to teach a student the derivation of a drug, its medical properties, action, and therapeutic uses is *one* thing, and to teach that student *how* to use and when to use it at the chair-side is *quite* another.

Many of our graduates of to-day who have not had the good

fortune of receiving instructions in a dental office from a competent preceptor are exceedingly lame in therapeutic technics.

I have a case in mind which will serve to illustrate. A graduate from a prominent school who had been practising for two years treated a putrescent incisor tooth for several months without any success. The putrescent condition was of short standing, and grew worse from the treatment. It became necessary to treat the tooth every day to keep the patient comfortable. If the dressing were sealed in the tooth the patient invariably suffered severely.

The young dentist applied to an older practitioner for information as to the cause of the difficulty. Upon questioning, it was learned that he had been using antiseptics that were irritating and easily dissipated.

The older practitioner advised him what to use, but after a short trial the young dentist gave up discouraged and brought the patient to the senior dentist for consultation. Upon removing the dressing the cotton was found so offensive that the odor remained in the office for a considerable time after the patient left. The canal was washed and rewashed with dioxygen until the mephitic gases were scarcely perceptible, and then dressed with eucalyptol and sealed.

The young dentist returned in a few days and stated that the patient had been very comfortable since that treatment. The technic of the treatment was a revelation to him. He learned what to use, but more particularly *how* to use it. He confessed that he had a great deal of trouble with putrescent teeth, and believed that he would progress nicely after seeing that demonstration.

And so I believe the use of the rubber jaw fits the student to go into the infirmary or into actual practice and apply the dental remedies with much more intelligence and effectiveness than he could without the use of it, or some substitute, to hold the teeth in a normal position.

In this little paper I have simply tried to give an idea of what can be accomplished with technic work employed collaterally with lectures. Many other ideas will present themselves to the thoughtful and ingenious worker in therapeutics who will employ this adjunct in his work as he continues in its use.

PHYSICAL DIAGNOSIS AS RELATED TO DENTAL COLLEGE CURRICULA.¹

BY A. H. PECK, M.D., D.D.S., CHICAGO.

IN view of the fact that during the past two years a number of the State Boards of Dental Examiners throughout the country have added the subject of *physical diagnosis* to their list of studies which must be passed to secure a license to practise dentistry in their respective States; also that I have for some years been impressed with the desirability and, I may say, the necessity of adding this subject to our dental college curricula, I concluded this would be as fit a subject as any for my paper at this time.

Heretofore this subject, whenever taught at all, has received what I may term unconscious attention from various teachers,—that is to say, in the regular teaching of their departments they have naturally referred to phases of physical diagnosis, but not until the past year has the subject been made a separate department and a complete course of instruction given.

The knowledge of man has steadily increased, keeping apace with civilization. Man has been brought to a higher plane through scientific investigation; his mind broadened and ripened in the fields of research. The furtherance of their profession and the elevation of their fellow-men have ever been uppermost in the minds of the great men of the past.

As you are familiar, it was discovered ages and ages ago that teeth were filled with pieces of wood, ivory, and other materials, as evidenced by the researches of the catacombs of Rome and Naples, thus assuring us that the art of preserving teeth was known to our ancestors of those very early times. Unfortunately, however, we do not know who the great dentists of those ages were, as the records of this work have been lost. Had this work been entirely satisfactory to these dentists and their patients, the latter being pleased and contented with such operations, our profession would never have attained to its present high, enviable position in this professional world.

Dissatisfaction with prevailing methods, and the laudable

¹ Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June 10, 1902.

desire to excel, set men to thinking and to doing, the result being that dentistry has developed from an humble trade to an honored profession, affording a field for usefulness to thousands, and whereby the suffering of the entire civilized world can be and is, in a great measure, alleviated.

During the past few years the courses of study have been lengthened in all professional schools. Only a short time has elapsed since a medical student could graduate after attending two courses of instruction of six months each, but now one is required to attend four years of nine months each, after having gained a good scientific or classical education as a foundation upon which to build his professional knowledge, thus requiring from six to eight years of college work to receive his degree of Doctor of Medicine. Let us not forget that dentistry has by no means been slumbering all the while, for the educational requirements for admission to a dental college have been steadily advancing, and the number of years and length of terms increasing, until now schooling equal to the second year of high school work is required, and another year four years of seven months each will be required.

Only a few years ago a student received a few lectures on physiology, when that part of his course was considered finished, but now it is one of the most important branches he has. Histology, pathology, and bacteriology have become important subjects, and the dentist would also be considered very lame without a knowledge of anæsthesia and oral surgery. More than this, the amount of practical work that must be done as a part of the dentist's preliminary education has more than doubled. What is the object of this advance? It is that his knowledge may be broadened, extended, and that he may be placed on a higher plane with mankind, as well as that he may be better able to satisfy himself and his patients after engaging in the practice of his chosen profession.

We, as professional men, are continually being called upon to give opinion as to the etiology and prognosis of certain diseases, and who will attempt to gainsay the statement that this we should be not only willing, but able to do, and it is imperative that we be as nearly correct in such counsel as possible. At times we find this easy, and again it taxes us to the limit, if not beyond; all of our knowledge and reason is called into play before we are able to make definite statements.

It is not always an easy matter to tell just how much vitality

a patient has, nor how much of a nervous shock one can endure, nor how long one can remain in a dental chair at a sitting without sustaining material injury. This we, as dentists, should know, so that our patients, on leaving our offices, will have received professional benefit instead of injury.

Who of you have not seen or are not cognizant of neurotic patients who were nervous wrecks for days after having had a large amount of dental work done? With the requisite knowledge and the exercise of forethought and judgment all this can be avoided. A few more sittings of shorter duration would have completed the work, at the same time acting as a stimulus rather than as a nervous shock. This knowledge we can gain only by a thorough study of our patients, and an understanding of the cause or causes of their ailments.

I hope to see the time when a dentist will inquire into the health and symptoms of his patients before deciding on the amount of work that is proper and safe to be done at any one sitting, as should a physician before prescribing a certain amount of a drug or drugs that are to be given for an ailment of the patient.

To judiciously outline our work we, as dentists, must have as thorough a knowledge as possible of the various diseases of mankind, especially those affecting the vital organs or those organs most likely to suffer when shock is inflicted. The symptoms of these diseases, also the physiological changes that may occur, are necessary to be understood. Who of us would keep a patient afflicted with organic heart disease in our chair for an unusually long and fatiguing operation if we were able to inform ourselves of the true condition of these parts?

There is only one way for us to gain this knowledge, and that is for us to familiarize ourselves with the normal heart, as to location, size, beat, rhythm, and sounds, thus enabling us to recognize pathological conditions when present. How embarrassing it must be for any dentist, after advising the administration of a general or local anæsthetic, to be told, on consulting the family physician, that such a course would mean certain death to the patient, whether true or not.

Physical diagnosis is the term used to designate those methods which are employed in the detection of disease during life by the anatomical changes produced by it. The nature and extent of such changes can only be recognized and appreciated by the diver-

gence which they cause in the affected organs from the known physical condition of these organs when in health.

The significance of physical signs in disease cannot be determined by theory; only by clinical observation confirmed by observation after death can this significance be determined.

If it be granted that it is at all desirable that the dentist shall possess this knowledge I am talking about, it at once becomes evident that he must enter into a systematic and thorough study of the only methods by which these physical signs can be determined in the living subject, and these methods are: 1. Inspection. 2. Palpation. 3. Mensuration. 4. Percussion. 5. Auscultation. 6. Radioscopy.

Some of these methods have been in use for many centuries. Palpation, for instance, was used in the Neolithic or polished stone age, 1500 B.C., to demonstrate the presence of fluctuation, while radioscopy is practically new. This method is the outcome of the discovery of the X-ray, by which, with the use of the fluoroscope, tumors or solid bodies are located in various parts of the body, that were impossible of discovery before. Fractures of bones, the exact kind and position, are determined by looking at the bone direct. Tumors of the internal organs are observed by this means, thus enabling one to diagnose conditions which were impossible of discovery before the X-ray was in use.

One must also be conversant with the various areas into which the body is divided, and which are bounded by definite anatomical relations. This is necessary, that one being familiar with the normal size and location of an organ can determine whether it is in its proper position.

It is necessary to know that the first area from a physiological stand-point is the *supraclavicular* region; and that this area is definitely bounded below by the inner three-fifths of the clavicle, internally by the trachea, and superiorly by a line extending from the junction of the outer with the middle third of the clavicle to the top of the trachea. Also, it is necessary to know that normally within this area are to be found the apex of the lung, the carotid artery, the subclavian artery, the subclavian vein, and the jugular vein.

Next below this is the *clavicular* region, which is that part of the thoracic cavity lying back of the inner three-fifths of the clavicle. An understanding of the anatomical boundaries and contents

of this region is also necessary, but with which I shall not inflict you in this paper.

The most important regions, from the stand-point of the dental practitioner, are the following: *Infraclavicular*, the boundaries of which must be carefully studied, that one may recognize the presence of the vital anatomical structures and organs in their normal positions. In this region are to be found, on the right side, lung tissue, the ascending vena cava, the right bronchial tube lying back of the sternocostal articulation, and also a small portion of the arch of the aorta. On the left side are found the pulmonary artery from its origin to its bifurcation, the left bronchial tube lying a little below the second sternocostal articulation.

The next region of special importance to the dentist, and which lies immediately below the preceding one, is called the *mammary* region. The lowest region in the anterior aspect of the thoracic cavity is called the *inferior mammary*.

Centrally located is the sternum, this area being divided into three regions: (1) the *suprasternal*; (2) the *upper sternal*; and (3) the *lower sternal*.

The back is divided into three regions: (1) the *suprascapular*; (2) the *infrascapular*; and (3) the *interscapular*.

All these regions should be carefully studied, as indicated above, in the two instances in which the boundaries and contents are stated.

A knowledge of the size and exact location of the heart are especially important, in the average subject the base of this organ being found at the second intercostal space, the apex-beat or the maximum impulse being at the fifth intercostal space from three-fourths of an inch to an inch to the left of the sternum. It must be understood that the apex-beat does not locate the apex of the heart, the latter being about an inch to the left of the beat.

The anatomy of the heart must be studied. It is necessary to know that there are four different valves, and what is expected of them in the performance of their normal function, and that the positions on the chest where the sounds made by the valves can be most distinctly heard are not immediately over the organ.

I thus briefly outline this foundation work that there may be no mistake as to what I consider necessary in the schooling of prospective dentists, that they may be able intelligently to apply the six methods of eliciting the physical signs of the various patho-

logical conditions of those diseased organs bearing directly on the practice of dentistry.

It is also necessary to be thoroughly conversant with the meaning of these various methods of physical diagnosis, how each is to be employed, and what is to be learned by it. That *inspection* means only that which can be determined by looking at the patient without further means of diagnosis. That *palpation* means the examination of the parts by the laying on of the hands, and in this method that only the tips of the fingers may be used, or the palms of the hands as a whole. That with *mensuration* certain facts are to be determined by the process of measuring. That by *percussion* is meant the tapping of the chest to elicit certain sounds under the varying conditions; that there are different methods of percussion, the *immediate* and the *mediate*. That *auscultation* is the act of listening for sounds within the body, chiefly to ascertain the condition of the lungs, heart, pleura, and other organs; that there are different methods of auscultation,—the *immediate*, which is the application of the ear directly to the part, and the *mediate*, which is by use of the stethoscope.

The *pulse* is such an accurate index to many of the lesions of the heart, it is necessary that one shall understand it in all its variations.

Thus would I have dental students instructed. I trust this paper will receive full and unrestricted discussion, for I want to know whether, in your judgment, this branch should be added to the curriculum of our dental institutions of learning.

This is a subject that has engaged my attention for some time, and it was my desire more than two years ago to present this subject to the profession, and urge its teaching in our schools, but, listening to the advice of trusted friends that the time was not ripe for it, I desisted. During the past year it has been taught in the institution with which I am connected, and, I believe, also in one other college. As I see it now, I cannot understand how any one can advise otherwise.

I hope to see prospective dentists so instructed in the future that they shall be able to recognize diseased conditions of at least these vital organs, and thus be enabled to avoid serious and possibly fatal mistakes. When this knowledge is acquired and successfully practised, the dentist at once gains the implicit confidence of his patients, his word with them becomes law, and his opinion is sought

and respected. Such a dentist is a real benefactor in the community in which he resides, and his success is assured.

He also has the satisfaction of knowing he is one who has participated in that "higher education," the practice of which can only result in assisting to elevate the standard of his profession, and to place it on a higher plane in its relation to other progressive professions.

GENERAL NERVOUS MANIFESTATIONS IN RELATION TO THE JAWS AND TEETH.¹

BY GEORGE V. I. BROWN, A.B., D.D.S., M.D., C.M., MILWAUKEE, WIS.

IN a paper read before the Section on Neurology and Medical Jurisprudence, of this Association, in 1898, and this, the Section on Stomatology, in 1897, I outlined the theoretical propositions upon which were based methods of treatment adopted by myself in the care of nervous affections, intimately related to disturbance caused by the habit of grinding and clenching the teeth, many general, as well as local, manifestations being attributed to this etiologic factor. The term "jaw-strain" was used in the same sense as "eye-strain."

Attention was called to the fact that wherever the natural teeth remain in the mouths of patients suffering from nervous disorders, it is noticeable that the occlusal surfaces show abrasion, due to constant grinding and rubbing, the effect of extreme pressure brought to bear during paroxysmal muscular effort or long-continued, excessive pressure, a condition frequently resulting from hours of pain and suffering. This has frequent mention by writers as a marked symptom among those who are victims to the various neuroses, but in no instance do I find where an author has thought fit to reverse the order of things and make the habit of the jaws which is responsible for this condition one of the etiological factors in bringing about the disease, rather than a result, as it is generally held to be. This hyperkinetic condition of the muscles of mastication is undoubtedly due to irritation of the brain-centres

¹ Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June, 1902.

governing these muscles, whether as a symptom of other neural disturbance, or *vice versa*.

Since the papers referred to were written, an almost continuous observation of such cases, and the practical application of these principles, have convinced me, more and more, that the importance of the subject is but little conceived by those who treat, as all must who treat at all, neurotics, or even victims to nervous functional diseases of lesser degree.

It is difficult to convey a due appreciation of, or, indeed, even to satisfactorily account for, general nervous manifestations, often due to dental irritation, slight though it may be locally. Yet it has occurred repeatedly in my experience with patients, who have been relieved by treatment applied solely to the etiological factor, that where, for any reason, the exciting cause was allowed to return to the original state, or the habit of irritation by grinding certain affected teeth was permitted to be resumed, the symptoms of pain, hysteria, muscular spasm, neurasthenia, or whatever they may have been, have returned at once, and again disappeared after local relief or correction has been given.

The rationale of the jaw muscle habit in its pathologic significance is thus explained. Whether central irritation be excited by some other primary disease and the peripheral irritation be a secondary result, or the local disturbance an exciter of the cortical centres, the effect as a factor in disease is manifested in several distinctly different forms, which are as follows :

1. Through the pterygoids a lateral grinding motion of the jaw of man takes place, which, if pursued at night, is easily noticeable by the grating sound, and usually attention is called to it. If, however, the masseter and temporal muscles are called into unusual activity, the result is that the jaws are firmly and tightly pressed together, without sound, and therefore often unnoticed, the pressure varying in individuals from two hundred to two hundred and seventy pounds. With the jaws closed normally and occlusion perfect, this force would be comparatively equally divided among the whole number of teeth. If, however, as usually happens in these cases, the jaws be shifted slightly to one side, a little forward or backward, then certain portions of the individual teeth are brought together, and they alone must bear this tremendous force. Ordinarily the membrane surrounding the root is capable of withstanding a considerable amount of traumatic irritation. But by

continued application of this pressure, especially when weakened through other general conditions, as of circulation or otherwise, the power of resistance becomes impaired, and one of two things must result,—either a local disturbance, made manifest by elongation of the tooth, and soreness to pressure (pericementitis), a not generally serious affection, accompanied sometimes by localized pain, usually comparatively easily remedied, or, as I have believed, a direct communication of this irritation to the larger nerve-trunks, to be by them carried to the other parts.

2. In deformities of the dental arch disarrangement of the teeth must change the angle at which the stress of antagonism is applied. If the crowns or cusps occlude irregularly, whether upon the lingual, buccal, or labial aspects, the bell-shaped, or contoured, natural crowns of the teeth are crowded together, and the pressure exerted by the muscles of mastication tends to crowd out of line the teeth so situated as to be most subject to this crowding effect; the roots, being conical in form, are likewise in some degree forced away from the apical portion of the alveolar socket, and though in the apical space (so-called) allowance is made for a limited amount of movement in the line of the long axis of the root, there nevertheless results a measure of nerve-stretching, where the branches of the fifth communicate through the apical foramina.

3. Exhaustion. Eye-strain continues only in the day-time, whereas the jaw muscles work day and night, such patients being most weary upon awakening in the morning, and the pain being most marked at that hour.

4. It is only reasonable to suppose that, with the force of the jaws pressed tightly and continuously upon certain teeth, the moment such pressure is removed the immediate result would be a hyperæmia of the pericemental and other vessels about the roots; frequent repetitions of this would bring about a chronic inflammation, evinced sometimes by pyorrhœa alveolaris, or, more properly, perhaps, interstitial gingivitis, and in others a low degree of inflammation that, through peripheral excitation, gives rise to many reflex symptoms.

5. When it is remembered that the lower jaw at birth is much larger than the upper, and also that the bones of the face are much smaller proportionately, at this period, than the bones of the head, it will readily be conceded that that constant pushing upward of

the wedge-shaped inferior maxillary between the bones of the superior maxillary, increasing its diameter posteriorly as well as laterally, must exercise a radical influence not only upon these, but also upon all the bones that are associated to form the nasal meati and the nasal septum which divides them. Thus the nasal, maxillary, lachrymal, ethmoid, inferior turbinated palate and sphenoid bones, which form the nasal meati, are affected in shape and relation by any force which would alter the position of their respective development; and in precisely a similar manner are the vertical plates of the ethmoid, vomer, the crests of the maxillæ, the palate bones, the rostrum of the sphenoid, and the nasal spine of the frontal bone, which combine to form the nasal septum, in all save the triangular notch of nasal cartilage, changed by any misdirection of energy which may cause a deviation in this dividing wall from its normal position or form.

Both Talbot and Kiernan make clear the fact that periods of stress, as they denominate certain stages, which markedly effect developmental and other physiological processes have much to do with health and the form as well as the character of the growth of both mind and body of the individual. There seems to be but little question as to the truth of these statements, and, if so, then why cannot stress arising at any other period from a most common cause likewise affect nerve-functions and metabolic changes.

Kiernan says, with reference to stress at the time of the eruption of the first molar, "In no small degree the struggle for existence during this period of stress centres around the development and eruption of the sixth-year molar. With the eruption of this molar, premature puberty, sexual precocity, epilepsy, gout, insanity, rheumatism, obesity, and other nutritive degeneracies may occur. All have been charged to the eruption of the sixth-year molar, whereas its irregular or difficult eruption is, like them, an expression of constitutional stress. Hygiene at this period means also constitutional mental and moral hygiene. Epilepsy, for example, is not a disease, but a symptom of weakness of certain vasomotor inhibitions. The first convulsion does not constitute epilepsy. Through a law of the nervous system, nerve action, once aroused, tends to repeat itself. In this way are established normal and abnormal habits, of which last epilepsy is one. In its early stages a habit, normal or abnormal, is easily checked. The first convulsion, therefore, could be prevented were its premonitions

known. A recurrence could also be prevented were its constitutional origin recognized. Observation of the general constitution at this time, because of the irregular eruptions of the sixth-year molar, would enable the physician to nip epilepsy and many other allied conditions, in the bud. Reflex notions, however, must be flung overboard. All irritations should be removed and any constitutional irregularity treated."

If periods of stress so exactly correspond to the different stages of dental development, intra- and extra-uterine, and if, as has been shown, there are stages in the life of the individual which are marked by the onset of a predisposition to such perversions of nervous activity as are indicated by the investigations of Kiernan, corroborated by similar results reported by Talbot, then the influence of irritation of the neural mechanism of the teeth can neither be questioned nor ignored as a factor in neurology. It may be, and doubtless is, an error to suppose that the eruption of teeth at a specific period coincident with the beginning of epilepsy, or any other manifestation of psychopathic or neuropathic condition, is the cause of such disturbance; that the real difficulty attending dentition is itself brought about by the same cause as the disease; but since it is, as a rule, absolutely impossible for the therapist to attend prenatal conditions, the point of vital interest and of value to him is that the correlation of the mouth, teeth, and jaw physiological and pathological processes to nervous affections, in one form or another, is almost invariably the rule; that at least in a large majority of cases a measure of relief can be given, and every means of assistance certainly should be opened if the overwrought, highly irritable, and hypersensitive nerve-centres are to be given opportunity to rest and regain their normal equilibrium.

Dr. Daniel R. Brower says, "The prophylaxis of epilepsy demands much more attention than it ordinarily receives. A convulsion in the infancy of a child of neurotic inheritance is often the first manifestation of an epileptic tendency, and deserves serious attention. Children of this tendency should be relieved from severe nervous and mental strain. They should be kept from the use of alcoholics, opiates, coffee, tea, and tobacco in early age and adolescence, and from sexual irregularities and excesses. Phimosis, errors in vision, diseases and deformities of the upper air-passages, or any other abnormality, may demand attention and correction."

Surely, if such minute prophylactic measures are necessary, the ever-present, active irritation of jaw clenching and grinding cannot be overlooked, and if carefully attended to would undoubtedly assume an importance far beyond present appreciation.

Dr. Harold Moyer says, "To my mind the central point in the diagnosis of neurasthenia is the presence of the fatigue symptom."

"Rest is the sheet anchor in the treatment of neurasthenia."

Complete rest must comprehend, in the light of what I believe the future will reveal, a consideration of the special muscles now under consideration, as well as others more generally understood.

Without exhaustive reference to authorities, or quotations from the literature of pathologic neurology, which might be continued *ad infinitum*, in proof of the fact that unusual activity of the jaw muscles is an almost invariable symptom associated with disease of this nature, it seems advisable to deal directly with the evidence of practical results in the treatment of cases.

Miss C., aged twenty-five years, unmarried, anæmic, very nervous, tall and thin; affection of the throat under treatment for some time, without relief. Pain in occipital region most severe, but during the attack would spread to the frontal and other regions of the face. Nervous storms of this character were quite severe and of frequent occurrence. Correction of occlusion by grinding, particularly the tooth most effected by the habit, gave relief. Result: gained thirty-five pounds in flesh, and almost entire freedom from pain.

Mrs. M., aged about fifty years. Family of four children; history of many years of headache with short intervals of freedom from pain; attacks showed tendency to increase in severity and frequency at the time my treatment began. Support was given by the aid of an upper plate, constructed in such a manner as to relieve the anterior teeth from the strain of occlusion. Result: almost complete freedom from pain for several months past, notwithstanding severe trial by illness of one, and surgical operation upon another, of her family.

Mrs. T., mother of a family of children grown, and a grandmother. Quite thin, anæmic, and very nervous. Treatment consisted in corrected occlusion, and fastened teeth quite loose from pyorrhœa. Result: increase of ten pounds of flesh, and general improvement in health.

Miss M., aged twenty-five years. Tall, well-formed, but history of headache almost constantly for many years; sometimes very slight, but on the least unusual effort of excitement very severe; digestive disturbances quite marked; many kinds of food could not be tolerated; susceptibility to irritation very great; during the more serious periods of pain drugs were frequently used to give relief; both upper and lower arches were quite regular, except the failure to erupt a right superior bicuspid, which caused slight disarrangement of occlusion.

Treatment.—Habit of clenching the jaws in subconscious moments and during sleep made it necessary to insert a soft rubber pad to protect and relieve the irritating influence of direct tooth antagonism in occlusion. This was, and is, worn constantly at night. Steady pain has entirely disappeared. Recurrent attacks seem to have nearly ceased. Stomach has lost its irritability, and at this time (after many months) the patient seems quite well; general health and spirits uncommonly good.

Miss —, aged — years. Extreme nervousness, manifested in a variety of ways; anæmic; lower arch crowded; grinding habit marked, and reported by her sister to have been unpleasantly noticeable during sleep. Appliance was adjusted to expand the arch, thus to give more room for the teeth, and in this way to remove the stress by relief of pressure from crowding, also to make occlusal irritation impossible. Result: complete disappearance of the unpleasant symptoms, full restoration to health, and very considerable increase in flesh.

After several months, the appliance was removed with the purpose in view of ultimately being able to dispense with its assistance. In a very short time there was a return to the former condition, which is again being relieved by the use of the appliance.

Miss F, aged thirty-three years, came in charge of an attendant, almost, or quite, unfit, because of mental disturbance, notwithstanding the fact that a history of the case showed a number of months treatment in a sanitarium, without relief. There were the following conditions: family history fair; a suspicion of specific history on her father's side, he having died of hemorrhage thirty years before. Her mother died of uræmia, and was a morphia subject.

Previous History.—She was an only child; scarlet fever at the age of five years; her ears commenced to discharge two years

later, and continued discharging until two years ago. She had grip one year previous to my seeing her. She had been a mouth-breather since she could remember, and when first seen was just convalescing from a severe attack of nervous prostration. She sought relief from deafness, and to regain health sufficient for the continuance of her occupation as dressmaker.

Treatment.—A saddle-shaped upper arch was widened, and occlusion with the lower made as nearly perfect as practicable. Nose and ear treatment was thus facilitated, with extremely gratifying result. She was able to dismiss the attendant after about ten days' treatment. Six months later she reported herself quite well, increase in weight fifteen pounds, and able to work regularly without ill effect. This patient has since married, and seems to be entirely cured.

Mr. H., aged about fifty-five years. Family history not very clear. A brother's child was mentally defective. Married and had several children, all, as far as could be learned, in good health. Patient powerfully built, and, aside from the peculiar affection from which he suffered, was in good condition; a moderate drinker of beer; no intemperance so far as could be learned.

The pain had begun in the left side of the face five years before he came to me, in July, 1900. The symptoms are best described by reference to the illustration, which shows the distortion of the facial and eye muscles upon the affected side, which took place during paroxysms of pain. This came and went at intervals of about one and a half to three minutes. At the time of my first treatment, and for a few months before that date, the symptoms had extended to the throat, the hyperæsthesia making it almost impossible to swallow even liquid involving the pharyngeal muscles, and thus exciting excruciating pain. Upon examination it was found that all of the teeth of the upper jaw, from the left superior central incisor back, had been extracted in the hope of giving relief. The remaining tooth was elongated so that it extended below its next neighbor, the right superior central incisor, about one millimetre, and this notwithstanding the fact that the incisal portion showed the effect of abrasion every much, having been worn away by the grinding of the teeth of the lower jaw, which also accounted for the elongation, due to thickening of the pericementum about the apex of the root. In order to give a temporary relief, operation was performed with the surgical engine, by open-

ing into the superior maxillary bone and severing the anterior branch of the trifacial. The pulp was removed from the left superior central incisor, and it was ground down so that it could no longer meet the teeth of the lower jaw in occlusion. All of the symptoms have disappeared, and the patient's appearance is as shown. Twice since the time of treatment he has returned with slight premonitory attacks of pain in the same region. Each time it was found that the affected incisor had worked its way down until it was again striking the lower teeth. Each time it was ground slightly, the relief being immediate and complete.

Miss F., aged thirty-five years. Referred by Dr. W. F. Malone, August, 1900. Family history unknown; height about five feet six inches; thin; anæmic. Burning sensation and hyperæsthesia of left side of tongue, which had begun about twelve months previously and had steadily increased. Six months later the same sensations were experienced in the throat, extending entirely across, and becoming so marked in severity as to threaten a complete nervous prostration. Upon examination, an ill-fitting piece of bridge-work, extending from the left superior cuspid to the first molar upon the same side, showed in a very noticeable degree the marks of the grinding habit due to evident malocclusion. Removal of the exciting cause and correction of occlusion gave relief. The patient reported in June, 1902, entirely free from the old symptoms and in good general health. Her weight, which was one hundred pounds at the time of the beginning of treatment, increased to one hundred and twenty pounds, with a complete disappearance of all nervous manifestations.

Mr. —, aged about twenty-five years. Paralysis of the right side of the face had come on gradually, having first been noticed about seven or eight days before coming under my care. Careful examination by a neurologist failed to show a reasonable cause for such a condition. Patient's health seemed to be good; reflexes were found to be normal, and as he was not at all alarmed about his condition, there seemed to be no psychic element which could be held accountable. Examination of the eyes by an oculist failed to discover any exciting cause in that direction. Upon examination it was found that, through malformation of the jaws, only the molars met in occlusion, it being impossible for the patient to bring the anterior teeth into contact at all. In the hope that some relief might be given, the molars were ground down sufficiently to

equalize the stress of occlusion. No other treatment was given. The symptoms began at once to disappear, the muscles regaining their normal usefulness in the same manner that it was lost to them.

How far it is either safe or wise to claim dental or maxillary irritation as exciting causes in such cases as the last one described I do not know. One other case of paralysis of the facial muscles, that had continued for a much longer time, the patient being a young married woman without children, and without, so far as could be learned, specific disease, in whom the grinding habit was very marked, was given a very considerable measure of relief immediately by extraction of a lower molar, which it was deemed wiser to extract than to attempt to treat under such grave conditions. Full restoration to usefulness of the muscles upon the affected side returned shortly after the alveolar socket had been healed. In another, a young lady aged about twenty-two years, there seemed to be a particularly intimate association between a paralysis of the entire right side, including the extremities, which lasted for several months, and was most puzzling to the physicians in charge, because no brain lesion could be diagnosed, although for a long time it was believed that the etiologic factor was of that nature. Her recovery, however, would seem to have disproved such a theory.

Many such cases as the one described could be cited that have come under my care during the last five or six years, and though results were not always as markedly successful as might have been desired, nearly all patients have been materially benefited, and other, more general treatment, assisted, while a very considerable number have been cured without other therapeutic measures. I am fully aware of the psychic element that is omnipresent in dealing with neurotics, and am also sufficiently impressed with the idea that one is apt to find too much in his own special field. Therefore it is my wish to emphasize, in conclusion, the following summary. The jaw habit may in some instances be an etiologic factor in functional nervous disarrangements, or more often, perhaps, only a symptom. But in the therapeutics of such diseases every method of treatment might reasonably be made more effective if its correction received due consideration. No dogmatic rules can be laid down by which ill effects of this muscle habit may be overcome. Careful study of individual characteristics requires the adoption,

different instances, of a great variety of methods, simple in themselves, yet requiring the greatest care and delicacy in order to be effective. One of the simplest and most beneficial appliances, quite harmless and yet capable of very general and useful application, is a hard rubber plate, with soft velum rubber border extending over the occlusal surfaces of the teeth. The palatal portion gives a sense of firmness and security, and the soft rubber covering to the crowns of the teeth makes grinding or serious injury by undue irritation impossible. It need only be worn at night, and thus gives very little serious inconvenience to the patient if carefully adjusted.

A consideration of the methods of treatment would require much more than the limits of this discussion prescribe, but every one who undertakes the application of any corrective measures to the dental organs should remember that in the highly sensitive state common to these patients it is quite as easy to do harm through failure to perfect the occlusal mechanism as it is to benefit by accuracy and manipulative dexterity.

THE LEGAL STATUS OF THE TERM "REPUTABLE" AS APPLIED TO DENTAL COLLEGES.¹

BY CHARLES C. CHITTENDEN, D.D.S., MADISON, WIS.

UNIFORMITY of dental laws and standards in the various States of this country has been a consummation long sought and most devoutly wished, by those men who have followed as well as those who have dictated and guided the development of our educational methods, with a view to placing the dental profession of this country where it rightfully belongs before the civilized world.

The comparative ease with which the legal right to establish and maintain schools and colleges in any State or Territory is secured is only exceeded by the great difficulties that have presented themselves in all attempts to unify methods, curricula, and standards for the conferring of the dental degree.

¹ Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June, 1902.

As schools increased in number, the estimated value of the dental diploma became more and more an unknown and uncertain quantity, which condition resulted in an effort towards the establishment by the people, through their legislative representatives, of some legal process of measuring and weighing the character and quality of any man's preparation and fitness before permitting him to offer his professional services to the public.

Since for obvious reasons a national standard could not be secured through Congress, it was left for each State to enact its own police regulations. Through the power of association which has been steadily growing during the past forty years, concerted action in the different States was possible in securing legislative enactment. A general and uniform draft of statute was prepared and recommended to the several States by committees selected for that purpose. But concert of action does not always bring uniformity of outcome.

The result has been a multiplicity and variety of dental laws almost as different in their construction as it is well possible to conceive—viewed superficially. For instance, forty-seven States and Territories of this country have enacted dental laws, in all but one of which a board of dental examiners has been created.

In twelve of these States no mention is made of the existence of a dental college. Any and all persons so desiring may be examined as to their fitness (no matter where acquired) to practise, and the board in its discretion licenses or rejects them.

Eight other States, on the other hand, will admit no one to examination who is not a graduate of a reputable dental college.

One State, Wyoming, has no board, but admits no one to practice without registering a diploma from a reputable college.

Added to these nine are twenty-six other States which, while admitting all who may so wish to examination by the board, at the same time direct the board to grant license without examination to those persons possessing a diploma from a dental college which complies with such standards and requirements as the law provides.

It therefore transpires that of the forty-seven enactments in this country for the regulation of the practice of dentistry, thirty-five specifically mention the possession of a diploma from a recognized or reputable dental college as a necessary or, at least, an important factor in securing a license to practise dentistry.

The different State laws make different specific requirements of colleges whose diplomas they accept as a qualification for license, but practically all laws provide that the college, after fulfilling all other specifications, shall, in addition thereto, be "reputable." In each and every case the board of examiners is left without any instruction as to the method of procedure in determining the reputability of a college, or as to the scope and meaning of the word "reputable." It is simply prescribed that the college must be "reputable," thus placing upon the board the judicial duty of establishing criteria of reputability and choosing its own methods of applying them to colleges when called to act officially.

Naturally, when standards have been fixed by a board which conflicted with the interests, financial or otherwise, of a certain school, and measured by which that school's diplomas are discredited, a definition of the board's powers and limitations has been sought by the use of mandamus proceedings. And there are several decisions extant on the statute-books of different States, all sustaining the position of the boards where there was no question as to the competence and good faith of the examiners.

It remained, however, for the Supreme Court of Wisconsin, in a decision handed down January 7, 1902, in the mandamus suit of *W. L. Coffey vs. State Board of Dental Examiners*, to so fully define and elucidate the whole question of the Board's powers, and of what the statute means by the word "reputable," as to set at rest any further cause or excuse for mandamus proceedings.

The State board had officially refused to accept Coffey's diploma in lieu of examination for license by the adoption of the following resolution:

WHEREAS, After due and careful consideration, acting under and pursuant to the provisions of Chapter No. 56 c. of the Wisconsin Statutes, this board has decided that in the opinion and according to the best judgment of the board, "the Department of Dental Surgery, — College of —," is not a reputable dental college; therefore,

Resolved, That this board does hereby refuse to accept the diplomas of said Department of Dental Surgery, — College of —, in lieu of examination for license to practise dentistry in this State.

Under mandamus proceedings in the lower court, all the reasons why the board declared this certain college to be, in its judgment, "not reputable" were brought out on the witness stand. These included, besides proof of certain misrepresentations by

members of the faculty, under official questioning by the board as to facts concerning the school and its management, deviation from generally accepted standards in matriculation and transfer of students, in equipment, in curriculum, in methods of and facilities for instruction and training, and in several other particulars as to the methods of conducting the school.

The lower court held that the board had erred in some of its proceedings, and declared the school "reputable."

The Board appealed from this decision to the highest tribunal in the State.

The Supreme Court reversed the decision of the lower court and sustained the action of the State board at every point in a most exhaustive opinion reviewing the testimony brought out in the lower court.

The following is the summing up of the law points by the Court:

STATE OF WISCONSIN—IN SUPREME COURT.

STATE OF WISCONSIN ex. rel. W. L. COFFEY,
Respondent,

vs.

C. C. CHITTENDEN et al., constituting the State
Board of Dental Examiners, Appellants.

SYLLABUS.

1. The scope of mandamus proceedings to coerce a person or board to the performance of a judicial or quasi-judicial duty extends only to compelling such person or board to act, not to directing him or it how to act, unless the underlying facts are undisputed, leaving no reasonable ground for action other than one way.

2. If a person or board is clothed with judicial or quasi-judicial power in the determination of questions of fact and the taking of some specific action upon such determination, and fails to make a proper investigation of such questions, it is not within the function of a mandamus proceeding, predicated on such neglect, for the court to assume and exercise the duty of such person or board and make such investigation.

3. The character of a dental college or other institution of learning at a particular time may be established by evidence of its character at a prior time not so remote but that it would be reasonable to assume that the prior condition still exists. The rule applies that, "when the existence of a person, a personal relation, or a state of things is once established by proof, the law presumes that the person, relation, or state of things continues to exist as before, until the contrary is shown, or until a different presumption is raised, from the nature of the subject in question."

4. The character of a dental college in April of one year is evidentiary of its character in May of the next year, and may have sufficient probative force in that regard to reasonably establish such later character.

5. The word "reputable," as applied to dental colleges in the law authorizing the State Board of Dental Examiners to license persons to practise the profession of dentistry, without examination, who have graduated at such college having certain specified requisites, means *reputable* in the general sense in which the term is ordinarily used,—worthy of repute or distinction, held in esteem, honorable, praiseworthy.

6. In passing upon the application of a graduate of a dental college for a license to practise his profession in this State, the Board of Dental Examiners must determine whether his diploma comes from a reputable source as an independent fact, considering the term "reputable" in its ordinary sense and measuring the character of the college from the standpoint of men competent to judge thereof by reason of their scientific attainments in the line of work for which such a college stands.

7. The State Board of Dental Examiners, proceeding reasonably, is the sole tribunal under the statutes to determine the questions of fact to be solved, precedent to the licensing of a person to practise the profession of dentistry in this State.

8. When a graduate of a dental college applies to the State Board of Dental Examiners for a license to practise his profession, the burden of proof is upon him to establish the reputability of such college.

9. The State Board of Dental Examiners, having once determined the character of a dental college, may properly consider all questions in regard thereto at rest till, by lapse of time or otherwise, some reasonable ground exists for believing that its character may probably have changed.

10. The State Board of Dental Examiners having once determined the character of a dental college, within all reasonable limits, when and under what circumstances the subject shall be re-examined rests solely in its discretion.

11. Since the law does not define the method by which the State Board of Dental Examiners shall proceed to determine the reputability of a dental college when that is material to its official action, such board may perform its duty in that regard in any reasonable way it may deem proper, and candidates for licenses to practise the profession of dentistry must submit to its judgment so long as they are within the boundaries of reason and common sense.—MARSHALL, J.

Beyond a peradventure the foregoing syllabus definitely settles several things heretofore misunderstood or left in doubt.

First. The intention and meaning of the word "reputable" as applied to dental colleges is "worthy of repute or distinction, held in esteem, honorable, praiseworthy."

Second. The question of reputability of a college as an independent fact is left to the decision of "men competent to judge

thereof by reason of their scientific attainments in the line of work for which such a college stands."

Third. The State board, proceeding reasonably, is the sole tribunal under the statutes to determine the questions of fact to be solved.

Fourth. The burden of proof is upon the graduate to establish the reputability of his college.

Fifth. The State board having once determined the character of a dental college within all reasonable limits, when and under what circumstances the subject shall be re-examined rests solely in its discretion.

Sixth. The board may perform its official duty of determining the reputability of a dental college in any reasonable way it may deem proper, and candidates for licenses to practise the profession of dentistry must submit to its judgment so long as they are "within the boundaries of reason and common sense."

The deduction of your essayist from all this is, that the question of unification of dental laws and interstate reciprocity of license, together with unification of dental educational standards on any reasonably high plane "within the bounds of common sense," is in the hands and entirely within the province and power of the State boards, provided they will act in concert in carrying out the high duties imposed upon them as the dental police officers of their several States, and this, too, without the enactment of any new dental legislation whatever.

The National Association of Dental Examiners and the National Association of Dental Faculties have enacted and adopted rules and educational standards that are acceptable to the profession at large, and have arrived at what general standards should be fixed as the criterion of reputability, but in order to make these "reasonable" standards nationally uniform it will be imperative that each and every State board in the Union adapt them to its use under its State laws and adopt them as its own standard of reputability.

Surely a standard built on such a broad foundation must be considered as coming "within the boundaries of reason and common sense," and therefore may be applied freely in judging the value of the diplomas of any applicant for license in any State.

In the twelve States first mentioned, where the law compels the examination of everybody and does not make any mention of

a diploma (taking the State of Massachusetts as an example), the character and scope of the examination is left absolutely to the discretion and judgment of the board; therefore it is entirely competent for that board to make the possession of a diploma from a "reputable" college as prominent a factor in the examination of a postulant for license as they may deem wise, and thus enables the boards of these twelve States to have as much to say as to what constitutes a reputable dental college as those of the remaining thirty-five States and Territories where statutes do give a specified value to the diploma of a reputable college.

So it will be seen that the statute in every State in the Union grants its State board all the judicial power necessary to join in the establishing of absolute national standards of dental educational requirements.

There is absolutely nothing in all this proposed unification of standards, etc., by the boards that can react in any but a beneficial manner upon the schools themselves.

The element of commercial competition will be eliminated where it exists, and in its stead the spirit of emulation will be greatly stimulated.

The improvement and advancement in the general character of the dental college course in the past very few years is a fact which gives great promise for the future of dental education in this country.

Few can know and appreciate at how great an expense of energy, time, and strength, and with what sacrifice of self and the comforts of life, the honest dental teacher carries on his labor of love. Many of our brightest and best men have shattered their health and shortened or sacrificed their lives for the advancement and dissemination of knowledge in our colleges, and in almost no instance has the pecuniary return been in any sense adequate to the sacrifices made, and still the signs of the times indicate that the end is not yet.

The schools are building themselves on broader educational foundations, fitted to support a more elaborate and symmetrical superstructure, whose power and beauty shall command the respect and admiration of the civilized world, as well as set the pace for all Christendom.

School men have at last come to understand that the examiners, with the law at their backs, are a tower of strength in

support of all honest educational efforts, as well as a menace to all forms of pretence and sham.

The only way in which this country can establish and maintain its supremacy in dental educational standards over the rest of the world, is by a concerted national legal standard being made by the legal guardians on whom the sacred trust is imposed—and these guardians must deserve and command the confidence and co-operation of the colleges, as well as the profession at large.

The question confronting us to-day is simply whether we as a profession will arise and enter into our birthright.

SOME NOTES CONCERNING PREPARATION OF TEETH FOR MICROSCOPIC STUDY.¹

BY MARTHA ANDERSON, M.D.

THE results obtained in working teeth for the past few years do not justify a paper on the subject, but these few notes are given to tabulate results,—successes and failures,—hoping to bring out criticisms on the methods used.

In decalcification the results have been far from satisfactory. In order to protect the dentine and get the pulp and dentine *in situ*, the slower methods of decalcification are better, but the delay has disadvantages. The acid mixtures penetrate and destroy the staining properties of the tissues and cause distortion. In order to save the pulp the apical foramina were sealed with collodion or sealing-wax; this has not been satisfactory, as the sealing material comes off in spite of careful handling.

Nitric acid in weak solution gives slow decalcification. A two per cent. solution, with frequent changing every few days, took over one month to give results. Lee says nitric acid causes no swelling and does not injuriously attack tissue elements. This has not been my experience, as it has caused much distortion and the tissue elements have been largely destroyed. It does, however, give fair sections of dentine.

¹Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June, 1902.

Kleinenberg's method (picric acid, 100 parts; sulphuric acid, 2 parts; water, 300 parts) is exceedingly slow, requiring several (five) months.

Schaeffer's recipe preserves the dentine, but the tissue elements are distorted and staining properties destroyed.

Von Ebner's solution took four months; dentine preserved; tissue elements distorted and stained badly, though not so badly as the others.

Chromic acid (Boll) gradually preserves dentine (two months); tissues distorted.

Haug's method (phloroglucin, 1; nitric acid, 10; water, 100) is rapid and has the advantage of penetrating dentine; the pulp tissue, however, is distorted and stains badly.

Huber's recipe (nitric acid, 5 parts; hydrochloric acid, $\frac{1}{2}$; water, 100) is rapid, requiring only a few days; it also causes distortion.

H. Smith's solution (hydrochloric acid, ten per cent., 12 c.c., sixteen hours, and nitric acid, 1.5 c.c., forty-six hours; nitric acid, 1.5 c.c., sixty-six hours) acts rapidly, entirely destroying the dentine and pulp-structure.

Chromic acid, five per cent (H. Smith) is rapid, eight to nine days, and destroys dentine and structure of pulp.

Andrew's solution (chromic acid, 140; nitric acid, 6; water, 100) is the only one that has given me any results that I can call good. Its disadvantages are its very rapid action; the solution in full strength completely destroying the entire tooth in a few hours. I have gotten results from using half strength and changing very frequently about every hour. If the tooth is forgotten for a few hours, it is apt to be destroyed. If one is required to give attention to other matters for a time, the specimen must be removed from the solution and placed in water, and returned to the solution again when convenient to watch it. Even then decalcification is apt to take place unevenly, and sometimes in spite of great care the pulp is attacked and partly destroyed by the acid. After this solution, sections have stained very well.

In preparing pulps for microscopic study, they were removed from fresh teeth and hardened in Müller's fluid. Flemming or formalin have given the best results. For staining cellular elements a good hæmatoxylin combined with eosin or Van Gieson's method is very satisfactory.

As a special nerve-stain, Weigert's method for medullated nerves is as follows: Harden in Müller's fluid; stain in a saturated solution of neutral copper acetate twenty-four hours; wash and pass into a stain composed of hæmatoxylin, 1; alcohol, 10; water, 90; saturated solution lithium carbonate, 1, for twenty-four hours. Then rinse in water and decolorize in borax, 2; potassium ferrocyanide, 2.5; water, 200. The nerve will stand out a deep brown compared to the other tissues. In studying sections by this process the nerve-trunks can be seen running from the apex of the pulp and branching off higher up, the fibrils running along the outer edge of the pulp just *beneath* the layer of odontoblasts. In a few cases I have been able to trace the nerve-fibrils out between the odontoblasts, but not into the dentine.

In pulps hardened in Hermann's recipe the nerves can also be traced. In pulps prepared by Weigert's recipe the pulp stones (?) are stained dark brown as the nerves. If they are pulp-stones, why do they stain thus?

So far the stains used for fibrous tissues and fat have been unsuccessful, but I have not yet completed my work in this line.

Reports of Society Meetings.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held on the evening of Friday, December 27, 1901, at the rooms of the Academy, 1731 Chestnut Street, the President, Dr. S. B. Luckie, in the chair.

A paper entitled "The Burnished-Cap-Crown" was read by Dr. P. B. McCullough.

(For Dr. McCullough's paper, see page 545.)

DISCUSSION.

Dr. J. H. Gaskill.—I should like to ask Dr. McCullough the advantage of making a first cap of platina and then fitting a gold band around that?

Dr. McCullough.—Of course, with a model of the prepared sur-

face of the root in the laboratory the operator may form a cap after any manner he may fancy, but by making the cap after the manner represented here (indicating the incisor) there is no solder inside of the cap except where the dowel is soldered. The cap is deeper inside than upon its labial face, hence the least possible amount of gold shows. The porcelain is ground flat to the filed surface of the 22-carat gold band, thus insuring the most perfect joint with no soldered seam exposed, and in addition one has the contour of the natural tooth, a continuous curve from the cutting edge of the porcelain to the edge of the cap, while with every other form of cap the curve is interrupted at the point of union of the porcelain with the cap and usually requires the defacement of the porcelain. By virtue of the layer of solder between the turned edges of the cap and gold band it is stronger than any other form of cap.

The more perfect the imitation of the outline of the enamel, the less likely is gum irritation to occur.

Dr. H. C. Register.—I do not hesitate to say that there are as many, if not more, roots destroyed by crowning than are saved by it, because as of the production of irritation, which induces gingivitis leading to pericementitis and the other ills that follow irritation. The ferrule should be used with extreme care. I very rarely, except in exceptional cases, let it run up above the gum at all. I prefer a plate of gold or platinum well fitted to the face of the root. Through this is passed the post of a Logan crown, which has its labial edge nicely adapted to the labial part of the plate, while the lingual edge of the porcelain is well ground away, leaving a space between the crown and the plate. After being satisfied that everything is as correct as one can make it, simply catch it on the inside or outside with a quantity of phosphate of zinc. I use eutectoid for this. If using a gold plate, fill in the space with low-fusing porcelain body; bake it in the furnace, and it comes out a perfectly solid tooth with a little gold or platina termination, and the adaptation is exact. A plain plate tooth may be used if preferred. When in position on the root you have not got the ring or ferrule under the gum to act as an irritant. The festoon of the gingiva will become normal. The chief use of the ferrule is to prevent the root from splitting.

Dr. S. H. Guilford.—I would like to say a word in commendation of Dr. McCullough's method. I have looked over the specimens very carefully at his own office, and I have seen him do part

of this work in his own laboratory. It has several novel features about it that are very excellent. There is one thing I liked, and that is its deviation from the common method of to-day,—namely, that of placing crowns, whether porcelain or hollow metal, in a hasty and careless manner. The band is a very useful thing, and I do not see how we can get along without it, but it does not necessarily create irritation. It simply needs to be properly made, to fit a root properly trimmed, and to be carefully adjusted. If that is done there is no more reason for irritation under or around the band than there would be without it. Of course, we do not pretend to make bands and force them beyond the free margin of the gum, but they are necessary. A ferrule is often necessary to avoid splitting, but that is not its only use. It prevents largely the washing out of the cementing substance which is apt to occur where no band is used, in spite of every precaution. One good feature of Dr. McCullough's method is that it is not too simple, hence not so apt to result in imperfect work. The pains taken in the several stages begets very accurate results, which should be encouraged because of the amount of quackery that has been brought about largely by the fact that crowns could be easily made and placed. The result has been careless and imperfect work. There are several features which he has explained that are really novel, and that I have not seen anywhere else.

It is all important to have as little space between the crown and root as possible. The main dependence should be the matter of fit. The cementing material should be placed to keep out the fluids of the mouth rather than for the purpose of holding the crown in position. A plate attached as he suggests would solve the problem of removal for cleansing.

Dr. J. H. Gaskill.—To my mind the only trouble with a ferrule crown is the badly fitting ferrule due to an improperly prepared root. The objection which I have to this crown of Dr. McCullough's is the width of band above the porcelain facing. Dr. D. D. Smith. I think, first suggested the plan of cutting well away from the labial or buccal portions of the root; so that the facing could be carried to the edge of the ferrule, thereby obviating a possibility of the gold band showing, as it is entirely covered by the porcelain.

The method of making such a crown is to make a band fit the root, which has been prepared as before described; cut out the front

portion and grind the facing so that the band is covered clear to the edge; this is then soldered to the band. The cusps are then shaped up and soldered to the band and facing. The pin is cemented in the root independent of the crown, the cement in the crown holding all together.

Should a facing break off, it can easily be replaced by drilling two holes in the position of the old pins, a facing ground to fit, and the pins spurred and fastened in place with cement; this repair will be as strong as the original facing.

Dr. Guilford.—I would like to say that the objection to the crown that Dr. Gaskill illustrates is that it requires a large amount of cement in the setting. It has certain advantages of first anchoring the dowel in the root and then putting the crown into it. But it involves filling up the large space with cement.

Dr. Gaskill.—How about an all-gold crown?

Dr. Guilford.—There is the same objection. With an all-gold crown it is well to allow but little space between the gold crown and the tooth, and then set with gutta-percha. The use of large masses of zinc phosphate is objectionable, because they take up the fluids of the mouth and become foul. Recently I removed a couple of crowns that were placed several years ago, in the manner Dr. Gaskill describes, and they were the most offensive things I ever saw. Where cement is used it should be used on the root first and properly shaped, so that when the crown goes over it it will require a less amount of cementing substance to hold it. The crown or bridge can be taken off at any time as well.

I use the red base plate. Line the crown with a coating of gutta-percha in solution. Heat the base plate and stretch it out until thin and cut into narrow strips and line the crown with it; the chloropercha will attach it. Heat the crown and try upon the wet tooth, trim, heat again, and reapply, and so on until it almost goes into place. The root is then thoroughly dried and coated with oil of eucalyptus or cajeput, which will dissolve the gutta-percha, and the heated crown is to be pressed into place, a napkin being used to hold it. When placed it can never be gotten off without heat. Where the crown is banded like certain of these, coat the pins or dowel with a solution of gutta-percha, place a thin strip of gutta-percha on the inside of the band, then proceed as before. The old way of heating the crown was objectionable, as so much heat was used that it burned the gum; by this method the gum is not in-

jured. The crown may be taken off by using heat to soften the gutta-percha, but not in any other way.

Dr. F. A. Peso.—There seems to be a great deal of merit in these methods, but I have had no practical experience with them. All depends upon the manner in which the work is done, and thoroughness in everything makes good work.

Dr. E. C. Rice.—One of the best points in this work is that in setting these crowns it is impossible to force the crown so far into the gum as to cause injury. The ferrule first having been made of the proper depth and the cap soldered on, the crown is put in place before the cement is put into the ferrule. It reaches the exact point of occlusion, and when the cement has been put into the ferrule and the crown forced into place it cannot go down any farther than when it was first tried on, no matter how much pressure is put upon it.

Dr. H. E. Roberts.—I feel like congratulating Dr. McCullough on the careful and workmanlike way in which he has prepared the specimens shown on the cards. The objection that Dr. Register has made to band crowns or ferrule crowns could certainly be obviated by Dr. McCullough's method, as he cannot force it down any distance under the gum. I have seen a number of ferrule crowns and all-gold crowns which are open to the objections that Dr. Register makes, and I cannot condemn them sufficiently. When a man will make a gold crown and use a mallet to force it up, never minding the patient's feeling, until he gets up to the process or above it, you can certainly expect to have trouble and lose teeth.

Dr. C. R. Jeffries.—I have not made crowns following these methods. I can admire the ingenious manner in which it has been conceived. In the battle with teeth, the success or failure, the excellence or the opposite, depends upon the men who do the work.

Dr. McCullough.—The idea of the V-shaped space cut in the upper bicuspid crown to set the porcelain, is that the thicker the facing, the less gold to be used. By the porcelain running back, it will not shade dark between the teeth in the mouth. By filing these lines perfectly flat, and by grinding both ends of the facing flat, you have with least labor the most perfect joint. As there is very little change in the soldering and very little space to be filled, and the tendency is to draw the porcelain tighter, there is no change in the joints between the gold and porcelain, as is apt to occur in the present method of making bicuspid crowns. You will observe

that with many crown systems the merits are summed up with the objectionable features in the detail of construction left out. It is believed that there is no system of crowning in which a result is obtained, or even approaching it, with so little pain on the part of the patient and with the accuracy of results, as this. For example, with every system advertised, the manufacturer avers that there is perfect articulation. Now, none of them provide a method for getting the action of the jaws, consequently they only have occlusion and never have articulation. They say they have perfect contour. The ready-made crowns that I have seen are bevelled on the palatine and buccal surface, and others that I have seen form the same curve on the palatal and buccal surfaces, hence the impossibility of contour.

Now, whether the band is fitted directly to the root or the measure taken with wire, there is no provision by any of these methods for fitting a fissure in a root that may extend down to the point where it is ground off below the gum. By taking this impression of the properly prepared root, the bevel is reproduced on the model to which the cap can be accurately fitted.

In one case crowned after this system the upper molar was so badly decayed as to totally obliterate the pulp cavity; considerable gum had to be cut away, and the crown anchored by pins being set independently in the roots. At the present time (after two years) the relation between the gum and crown is absolutely natural in appearance. In cases where it has been necessary to cut away process to get bevel, the gum has without exception become normal. In cases where a slight gingival irritation is present upon the lingual surface of several teeth, with a perfectly healthy condition buccally, the same condition has appeared upon the crowned teeth. The first visit is for the preparation of the root and taking the impression, the second for fitting the dowel or taking the bite, and the third visit to set the finished crown. In cases where there are no occluding teeth the molar crowns may be set at the second visit of the patient. In the case of split teeth, it usually happens that the split section slants off under the gum. In such cases the root may be prepared in two ways for the impression. The sections may be ligated, the root bevelled, an impression taken, the split section removed and marked in the impression; or the split off piece may be taken away and the impression tube cut so as to include the lines of fracture. It seems to be the only system that applies alike

to every tooth in the mouth in any condition. The conception of taking an impression and forming a cement model cannot help being of advantage, as it makes it possible for work to be done in the laboratory heretofore done in the mouth. By making the cap for the molar crown it serves as a guide in setting and reinforces the crown at the edge fitting the root. The detail of this system provides for fit contour, approximal contact, articulation in contradistinction to occlusion, and parallel alignment. Natural teeth may be set in the mandrel section of the swaging device and any surface reproduced by swaging. Crowns for regulating appliances may be made by filling the plaster impression of the occlusal surface of the tooth to be crowned with zinc phosphate, and upon this swaging the cusps, which when soldered to the band fitted around the plaster tooth forms a crown that may be set at the second visit of the patient.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, on Wednesday evening, February 5, 1902, at 6 o'clock, President Bradley in the chair.

Two papers were read, the first by Thomas Fillebrown, M.D., D.M.D., entitled "Physiological Results of Operation for Cleft Palate," with cases; the second by Eugene H. Smith, D.M.D., entitled "A Contribution to Operative Orthodontia," illustrated with stereopticon.

President Bradley.—I have the pleasure of calling the attention of the Fellows of the Academy to this article which I hold in my hand, a piece of carving done by Dr. Belyea, with the help of the dental engine. It is a fine specimen of artistic work, and I think the Fellows of the Academy will be glad to see it. I will pass it around.

Dr. Belyea.—It is done on steel, and it is not quite finished.

there is a good deal of work to be done on it before I should want to say it was finished.

President Bradley.—This evening we have quite a programme to present to the Academy, but at this time I will say that if any fellow has an incident of office practice to present, instruments, or anything of that kind, now is an opportunity.

If there is nothing of that character to be presented, before we proceed to the consideration of the papers Dr. Cecil P. Wilson has a matter which he would like to bring before the Academy at this time.

Dr. Wilson.—About two months ago those of us who are members of the Dental Protective Association received a circular from Dr. Crouse, announcing his intention and desire to give up the labors which he has carried on his own shoulders, singly and alone, for so many years. I do not know that many of the members of the Academy realize what Dr. Crouse has done for the profession. If the true story were told, it would show that many years have been devoted to the cause of our profession, at the cost to him of a large amount of valuable time and money. During the time when the Crown Company was most actively engaged, and, in fact, many years before that, Dr. Crouse gave up weeks and weeks of his time, for which he has never received a single cent, or the slightest remuneration in any way; and added to this, there is not the slightest doubt about his absolute honesty and integrity.

After consulting with some of the members of the Academy, I wrote and asked him if it would be agreeable to him if the matter were brought up before the Academy, and he said it would. I received a long communication from him, which I should like to read to-night, but think perhaps it will be better to reserve until a later meeting.

I would like to make a motion that a committee of five be appointed by the chair to take into consideration the advisability of making some substantial recognition to Dr. Crouse for his unflinching labor and devotion in behalf of our profession, also to assist him to place the Dental Protective Association upon a permanent basis, the committee to have power to enlarge their number at their discretion.

Dr. Meriam.—I saw something of Dr. Crouse at the time this Association was formed, and I wish to second that motion. I do not think that many of us know how much Dr. Crouse has done,

or what he has had to face. I can remember, and probably the memories of many of us go back to rubber days. I remember once in Salem a woman came to one of the offices, and had an impression taken, and the dentist in the evening when making a call saw an impression on the desk of one of his neighbors, who said, "I took it this morning for a woman." "We are stuck!" exclaimed dentist No. 1. She had been from office to office, and it was the business of that woman to go over the country and have teeth made, and then dentists were brought into court on the evidence obtained.

Perhaps that could not have been so in bridge-work, but it was similar. I have heard of a man giving clinics at a meeting, under contract to report to the Tooth Crown Company all the men who were doing bridge-work at the time. That sort of thing would have multiplied all over the country had not Dr. Crouse taken the stand and done the work he has. No one could have been secure. There could have been no peace in practising with spies about. Only such work as Dr. Crouse has done has made quiet practice possible. Of course, it is easy to praise Dr. Crouse, but that is not necessary, as his work has been before us.

Dr. Fillebrown.—I want to say, in regard to the remark that has been made here that Dr. Crouse has never received a penny, that I have been on a committee several times that has looked over these books and audited them, and I am very sure that he has never taken a penny from the treasury. The idea of this, as I understand it, is to start a movement that shall result in some substantial return to Dr. Crouse for his many sacrifices and long service, and not simply from the Academy, but that it shall be country-wide. I did not hear the resolution, but I understood it was to act in conjunction with other committees.

Dr. Wilson.—I intended to leave that entirely with the committee.

Dr. Fillebrown.—My idea is that the committee should take into consideration not simply what the Academy will do, but stimulate other societies to do something. This, I understand, is done not without the knowledge of some New York men already, and it may extend to other societies and be a national movement.

Dr. Brackett.—If I rightly understand the reference to the circular that Dr. Crouse sent out, there was some expression in it to the effect that he had carried this burden without compensa-

tion, and that he would be under the necessity of withdrawing, looking forward to future years and to making provision for his family. I immediately wrote Dr. Crouse, in season to be presented at the annual meeting of the members of the Protective Association, that I felt that his services should be retained in behalf of the Protective Association, and that they should be amply compensated; that there were other men who could fill teeth, other men who could carry on the routine of dentistry. I question if there is another man who can do that particular work as he has done it.

I sincerely feel that this movement should be something more than an expression of sympathy. It should give something in the way of substantial compensation for the time and labor and effort which he has faithfully devoted through these many years. It is my earnest hope that such action will be taken as will justify Dr. Crouse in giving to continued service in this most excellent cause, in behalf of all of us, such portion of his time as is needed, and that he will be well compensated therefor. It is the truest economy for all of us to pay Dr. Crouse for doing this work.

Dr. Clapp.—I want to make one suggestion that has just come into my mind. All of us would be perfectly willing to pay another assessment, as he calls it, of ten dollars to the Protective Association to protect us for some time to come. Now, if it was understood that it was rather intended that every member of this Protective Association should make a contribution of ten dollars, and let it go to Dr. Crouse, it would help him and help us.

Dr. Dowsley.—I have not seen the circular that has been referred to. Dr. Crouse did not send me one, but I have been in constant communication with him for two years or more on the subject of the Dental Protective Association. Last October I met him in Springfield, and I feel that I can say that I know what Dr. Crouse's desire is. I do not think that he intends to retire from the presidency of the Dental Protective Association; but he realizes that he is growing old, that he may die at any moment, that there is no one to take his place, that the membership of the Dental Protective Association is not growing as it ought, and he wants some means devised whereby the membership of the Protective Association will be increased. What that method is he would like the various associations throughout the country to suggest, and he wants to get the best. It seems to me that ten dollars from

an association of this kind would be of very little help to him. The Protective Association is Dr. Crouse's monument, and we want to maintain it, and that is his idea. Dr. Crouse wishes a committee of counsellors to assist him in the management of the Association at the present time; and hereafter when he is not at the head, perhaps, they will be familiar with the workings of the Association.

President Bradley.—I was under the impression that Dr. Clapp's suggestion was ten dollars from each member, and not that amount from the Academy merely.

Dr. Clapp.—That is correct.

Dr. Ainsworth.—I would like to ask if there is any one present who has any idea of the amount of money we have in the Dental Protective treasury.

Dr. Dowsley.—I do not know the amount, but Dr. Crouse says that he has ample funds to carry on any prosecution that is coming on at the present time.

Dr. Fillebrown.—I presume every member here is aware of the fate of that last law-suit. It was nolle prossed on account of collusion.

President Bradley.—Gentlemen, we have this evening two papers to present, the first one entitled "Physiological Results of Operation for Cleft Palate," with cases, by Thomas Fillebrown, M.D., D.M.D.

(For Dr. Fillebrown's paper, see page 557.)

President Bradley.—I will now name the members of the Committee to consider the motion of Dr. Wilson: Dr. Wilson, Dr. R. R. Andrews, Dr. E. H. Smith, Dr. Charles A. Brackett, and Dr. Thomas Fillebrown.

DISCUSSION.

President Bradley.—The subject is open for discussion. I am sure the Fellows of the Academy have been pleased with the exhibition that has been made in their presence this evening, and which I hope will be prolific of discussion. We shall be glad to hear from those who wish to say something on this subject; we want the time to be utilized.

Dr. Andrews.—I want to express my pleasure and gratification at the demonstration which has been given here to-night. We ought to be proud of a man who can accomplish such results, proud that he is a dentist, and proud that he is one of us. I have been very

much gratified. I did not suppose it was possible in so short a time to bring about such results, apparently perfect.

Dr. Meriam.—I remember some years ago Dr. Fillebrown brought a matter of this kind before the Harvard Odontological Society, and I said at that time that we had had dentists who had become surgeons, but they had left their dentistry behind and had adopted the old surgery,—that is, they became surgeons minus the dentistry. And now this is dentistry plus the surgery. That I said some ten or fifteen years ago, and I should echo it to-day. I think it shows what a dental training, added to an ordinary surgical training, can bring about, and I do not think it could be brought about in any other way than by the special work of the dentist being added to the work of the surgeon. It is useless to add words of proof after what we have seen to-night.

Dr. Fillebrown.—We do not want to hear them. I should like a fair statement made as to what you think of the physiological demonstration. Did they speak well?

Dr. Meriam.—Certainly they did. I think we can all bear testimony to this. I do not think any of these persons would have any great difficulty in conducting any of the ordinary occupations of life; they are men who have been restored; men that otherwise would have been incapacitated have been restored by this operation so that they can do the ordinary work of life as they could not have done it without this operation.

Dr. Werner.—What appears to me worthy of consideration is the changed anatomical condition, the comfort that such must be to the patient, the cleanliness resulting from it. They are certainly in a more normal condition. How much better they speak we cannot tell, but they certainly speak pretty well. How badly they spoke before we can only guess. I am satisfied myself that they are improved. Their anatomical improved condition, their appearance, the satisfaction it must be to them all, I think is a very creditable thing for dentistry to have developed, and considerable credit belongs to the operator, Dr. Fillebrown.

Dr. Baker.—Mr. President and gentlemen, when the subject of cleft palate is under discussion, it is generally expected that I will have something to say; also that it has been said that I was prejudiced in regard to the operation. The latter is incorrect. On the other hand, whenever I can see any improvement in the speech after an operation has been performed, I am only too glad to recog-

nize it. To my personal knowledge Dr. Fillebrown has given more or less attention to this subject of cleft palate for the past twenty years. (Dr. Fillebrown: "Halve it.") I go back farther than the period of your surgery, to the time that you first made obturators. To-night is the first time during the entire period that he has given any demonstration that convinces me of improved speech, and that I confine to but one of the cases that he has presented.

In the first case shown, the operation having been performed when the patient was quite young, there was a marked improvement in speech, and he was justified in operating; and I congratulate him upon his success. If all cases were equally favorable, I would never recommend an obturator; but this is one case in five hundred, and of other cases that he has shown I cannot say so much in their favor. My opinion, based on twenty-five years' experience, is that if there is any improvement at all, it is entirely due to vocal training.

Where I criticise Dr. Fillebrown is that he does not discriminate between the different cases, but apparently operates upon cases where there is no more possible chance for improvement in speech than there would be to cut their tongues out. I repeat that I do congratulate him upon the success of the first patient shown here to-night. The result is marvellous.

President Bradley.—The next paper is to be illustrated with the stereopticon. Dr. Smith is to present to us a paper entitled "A Contribution to Operative Orthodontia," illustrated with a stereopticon.

(For Dr. Smith's paper, see page 553.)

DISCUSSION.

President Bradley.—The subject is now open for discussion. We have had presented to us this evening two papers illustrating work that is being done for people in the clinic of Harvard University, or Harvard Dental School, and I am sure it is a very gratifying exhibit of what is being done in those departments. We shall be very glad to have the papers discussed on their merits, or in any way that you wish.

Dr. Werner.—I think dentistry is well advanced over what it was fifty years ago, when we have two subjects like these brought before us in one evening, the outcome of systematized, scientific advancement; and as dentists, in all modesty, we should be proud

of our profession and the work going on in our ranks. And when we hear of millions being given for education, I think we, in modesty, can expect or hope that liberal sums should be given to our dental schools. Certainly we are doing good work for humanity. We are curing deformities, we are correcting palates, and we are saving teeth. And if we claim to-day that we are a specialty of medicine, we only need to back up that statement by showing such results.

The predominating thing in my mind is the satisfactory results of modern or scientific dentistry in comparison with twenty-five or thirty years ago. We can be proud of our profession; we ought to love it; and ought to have in our work that high aim that enthusiasm, skill, and science produce. It is the high aim we need, for not failure is crime, but low aim. I think the things we have seen to-night are the results of high aim, faithful work, and scientific study and progress.

May I make this addition, that we could hardly expect a changed condition in a patient of, say, twenty-two years of age or more, in the ramus or in the glenoid cavity, but that we would get results more or less from the tipping of the teeth; but whether or not a change does take place at an earlier age, as in the case spoken of,—that of Dr. Baker's in his own son,—I would like to hear the opinion of the members whether a change takes place in the ramus, in the glenoid cavity, or is it the tipping of the teeth only?

Dr. Baker.—Mr. President, if you do not wish me to talk, you must not bring up such interesting subjects for discussion. Before discussing this paper I want to fully understand a sentence that Dr. Smith had in his paper. If I understood him correctly, he made the statement that he believed that it was the teeth tipping, rather than the jaws changing. I want to be clear on that point. It is my opinion, and I have not the slightest doubt about it, that the change is mostly in the jaw. This is something that we wish to prove. It occurred to me, when Dr. Smith was throwing his illustrations upon the screen, that if we could get a little closer together in our views we could better solve this point in view. Before I go any farther, I wish to congratulate Dr. Smith upon bringing these most interesting cases before the society. They certainly have been extremely interesting to me. As I understood it, they were not all completed cases.

I do want to criticise a little: it may be my nature. I think if

he had gone a little farther, he would have got better occlusion. Occlusion is vital to the success in regulating, and it is impossible to get teeth to stay in place without it. I have become more and more convinced on this point the past few years, as you know I see a great many of these cases as dentists bring them to me. I have seen many cases where they have attempted to regulate the teeth and simply bring the upper and lower teeth into line, regardless of correct occlusion, resulting in little benefit to the patient.

Another point I wish to speak of, which Dr. Smith did not allude to in his paper, is extracting. I am firmly convinced that it is one of the worst things which can be done in the attempt to regulate teeth. There are very few and rare cases where it is judicious to extract. You cannot get the right relation of the jaws to each other, and it is impossible to do so. You may get fair results, in some cases, but very seldom.

There is one case which Dr. Smith has presented, which he stated was the first case on record that was ever reduced without a chin appliance, where he used the Angle expansion band and the retraction rubber bands. I believe the retraction rubber bands were first introduced by myself, but at that time I had never used them on a protruding lower jaw, but only on the upper jaw. As far as I know, Dr. Smith was the first one to apply them to a protruding lower jaw, which was undoubtedly the first case on record; but I will tell you, gentlemen, I hope to bring the case before the society very soon. When I commenced the case the lower front teeth were out so far one could place their fingers between the upper and lower teeth, and to-day the lower ones are comparatively straight, and the chin has reduced in proportion more than the teeth. And I hope in this case to convince Dr. Smith and all others that the jaw moved rather than the teeth tipped. For the above case I have made a harness, as you might call it, or head-gear, which determines this point definitely. I do not wish to say too much about it now, but prefer to show it to you later. I trust to get the case completed so as to show it at the April meeting, and I anticipate you will be converted, as I said before.

I want to speak a little out of school. That case of a protruding chin I have seen before. As Dr. Smith has said, my son had charge of it under his instructions. The student that was doing the work was over-anxious to get good results too rapidly, so he ground the lower teeth back a little. (Dr. Smith: "The young

man was not to blame; he ground the teeth because I told him to.") If he only had been patient, I think that the teeth would have settled themselves into proper occlusion, and the jaws would have closed just as well, and saved the grinding. I do not wish to convey the idea that he spoiled the teeth or injured them, by any means, but I do think it is better not to grind teeth when it can be averted.

Dr. Meriam.—Looking at Dr. Smith's appliance, I can see that it has its force beginning and ending on the teeth. But that it has affected the glenoid cavity is not brought out by anything that Dr. Smith has shown to-night. But a chin-piece applied to the head, drawing the jaw into the glenoid cavity, is another appliance and opens up another possibility.

But this thing can be very easily settled. There can be a measure put upon the face, following the lines of the jaw, a flat steel, with a cap for a measure, and then passing by the glenoid cavity, an X-ray taken before the operation is begun. That will show the appliance in place, the position of the glenoid cavity. The operations can then be carried out and the case compared with an X-ray taken when the thing is done. It can, I suppose, be accurately studied in that way and the question determined.

Dr. Smith speaks of the case of twenty-one. I have a similar case. These cases are interesting because they go so far beyond what we hear. A mother said to me that her boy was very ill (he was then nearly twenty), and, tossing on his bed, he said, "I might as well die now, anyway; I have no chin." Said she, "I never knew you felt that way, Arthur." "Do you suppose I ever forget it?" he said. When she told me, I began on the boy, and I carried the case on with results that were very successful, and that boy gained his chin, at least, as the other teeth were drawn in. Instead of being any longer conscious of himself, he lost all that consciousness, and what went far beyond any mechanical work I had done was the satisfaction given to that boy.

Dr. Smith speaks of the age of the patient when this was begun. I think there is a loss, of course, in the building of new tissue in the security of those teeth afterwards at that age. But there is a great gain in the co-operation that we get from the patient who wishes it done, in their intelligent keeping of appointments, in bearing pain, and that sort of thing, which we may not expect from younger patients.

Here is this evidence presented to-night of what the poor may have done for them in our modern civilization. This is a record that is of credit to our civilization, that children and people can go to an institution and have such intelligent work done with such expert supervision, and these results reached. I do not know of anything of recent years that has added so much. Of course, all through years past we have made the blind to see and the dumb to speak, and all of that, and that was in its day; and now the thing has come into dentistry, and we are doing our part, and I think the exhibition to-night shows that we do it well.

Dr. Baker.—There is one point I omitted where Dr. Smith spoke of tipping the anchor teeth. This model I have in my hand with the appliance on it brought it to my mind. The tipping of anchor teeth can be prevented by having the tubes on the anchor band of considerable length. In so doing, what moving there is of the teeth has to be done bodily in the jaw. This necessitates a very slow process, if not an impossible one.

Dr. Smith.—There is no need of tipping them.

Dr. Baker.—There is no necessity of tipping them more than one one-hundredth of an inch.

Dr. Meriam.—That applies to which teeth?

Dr. Baker.—Any teeth that you use for anchorage. With a short tube on the band, as they have very little leverage, they will tip; by having a long tube, it absolutely prevents it.

Dr. Werner.—Is it not also modified by the position of the tube, whether it is anterior or posterior?

Dr. Baker.—I do not think that has any effect as to the tipping.

Dr. Wilson.—If I can put in just one word here, I do not think Dr. Baker has explained that fully. For instance, if you have a six-year-old molar tooth, and ligate the front teeth, then put on your maxillary band, you will have a tipping molar; there is no question about that at all. You must ligate your bicuspids next to the molar with the tube; otherwise they will surely tip.

Dr. Werner.—One thing should be stated,—namely, that the occlusion of the teeth is a very essential factor in regard to their being retained. We must not be deluded into the idea that we can regulate teeth without occlusion, and retain them. Non-occluded teeth will change again, while the occluded teeth will be kept in place.

Dr. Wilson.—The question as to whether there is any change

in the glenoid cavity is an extremely interesting one. Personally I do not think there is any change. I think the change is simply in the teeth and in the bone. But it is a very interesting question, and the suggestion that Dr. Meriam made about the X-ray is a very good one.

Dr. Werner.—Would not you modify that, Dr. Wilson? Would not you say in a young case the probabilities are that there would be a change in the ramus, beginning from the angle here?

Dr. Wilson.—There might be a change in the ramus, but in the glenoid cavity, no. There is a constant change going on in the ramus as one gets older. During childhood the ramus is almost flat, then there is an angle, and in old age it is flat again.

Dr. Fillebrown.—Mr. President, I wish to express my appreciation of the completeness as well as the excellence of Dr. Smith's paper, and in looking at these models which have been passed around I take into consideration the criticism that has been made in regard to the occlusion. As an offset to that, I ask any man what fault there is to be found with the occlusion as it appears in the completed cases? I say it is as good as could reasonably be expected by any one in any case under treatment. I do not see why it is not in every way satisfactory. The paper and illustrations are so complete that those of us who at least know no more of the work than the gentleman who presented the paper certainly cannot add much to it.

I would also like to speak of the remarks by Dr. Werner, which hit the nail on the head, as to how to retain the teeth in place. I have one case in hand now that has given me considerable trouble, and another one that I have got an appointment to apply a retaining appliance to, and that is a case of lateral incisors where one is within the arch. There is no occlusion that will hold the tooth in place in either case. I put a band on one, with a brace on the other teeth, and held it there for a year, and after taking it off the teeth preceded a good deal.

The one that I have an appointment to complete is a case of a left lateral superior incisor, and I have just got it out in place. The arch is regular and the teeth close together, and I moved it out once, but by the patient's neglect during his absence it got back again. I have not got it into place again. The plan I am going to follow there is that in the cuspid and central there is incipient decay, and I am going to prepare those cavities from the

lingual aspect, and put in some fillings and make them prominent enough to form bearings for the teeth and hold them. I tried this some years ago with perfect success.

Dr. Andrews.—I have a patient who came to me within a week. I tried to pass a ligature between the cuspid and the lateral; something stopped it, and on examination I found a small gold screw that I had put in twelve years ago to retain the lateral in place, and had forgotten all about it. There was no decay about it.

Dr. Fillebrown.—I think I would not hesitate to cut into a sound tooth and make a filling just for that purpose.

Dr. Baker.—I have discovered something else which I want to congratulate Dr. Smith on, if he deserves the credit. I do not suppose any one else noticed this hinge. It goes together very easily, but you cannot take it apart unless you tip it 'way over.

Dr. Smith.—I do not deserve the credit of that, Mr. President. This hinge is a very clever invention of one of our students, and requires considerable skill in bending the wires.

Adjourned.

CHARLES H. TAFT, D.M.D.,
Editor American Academy of Dental Science.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

FIRST SESSION.

THE Section on Stomatology met in the upper club-room of the Grand Union Hotel, Saratoga Springs, June 10, 1902, at two P.M., the Chairman, Dr. A. H. Peck, of Chicago, in the chair.

On motion, the programme was accepted as published.

Dr. R. R. Andrews, of Cambridge, Mass., took the chair, and Dr. Peck delivered his address, entitled "Physical Diagnosis as related to Dental College Curriculum."

On motion of Dr. Vida A. Latham, of Chicago, the courtesies of the Section were extended to Professor Gage, of Cornell.

The paper of Dr. Peck was discussed by Drs. J. L. Williams, Vida A. Latham, Professor Gage, Drs. G. V. I. Brown, G. F. Eames, G. Lenox Curtis, M. L. Rhein, E. S. Talbot, D. E. Hoag, E. A. Bogue, and R. R. Andrews, and Dr. A. H. Peck closed the discussion.

Dr. R. R. Andrews of Cambridge read a paper entitled "The Embryology of the Dental Pulp," and gave a lantern-slide exhibition of the embryonal pulp and the dentine tissue.

Dr. Vida A. Latham, of Chicago, read a paper entitled "The Histology of the Pulp," and gave an exhibition of photomicrographs and lantern-slides of developing teeth, illustrating the points of the paper.

The discussion of the papers of Drs. Andrews and Latham was, on motion, postponed to the morning session of June 11.

On motion Dr. J. L. Williams, of Boston, Dr. G. V. I. Brown, of Milwaukee, and Dr. E. A. Bogue, of New York City, were appointed on the Nominating Committee, and the secretary was instructed to cast the ballot.

The Section, on motion, adjourned to Wednesday morning, June 11, at 10 A.M.

SECOND SESSION.

The second session of the Section on Stomatology was called to order by the Chairman at ten A.M. June 11.

The paper on "Notes on the Preparation of Teeth for the Microscope," by Dr. Martha Anderson, Moline, Ill., was read, and was discussed by Drs. Latham, Talbot, Knight, Rhein, Butterfield, and Andrews.

The Nominating Committee reported the names of Dr. M. L. Rhein, of New York City, for chairman, and Dr. Eugene S. Talbot, of Chicago, for secretary. On motion, the chairman cast the ballot, and they were declared elected.

The discussion of the papers of Drs. R. R. Andrews and Vida A. Latham, which had been postponed at the previous session, was taken up and participated in by Drs. Rhein, Bogue, Andrews, Williams, Talbot, Curtis, and Baldwin, Drs. Andrews and Latham closing the discussion.

Dr. Eugene S. Talbot, of Chicago, read a paper entitled "Evolution of the Pulp." Discussed by Dr. Latham, and closed by Dr. Talbot.

Adjourned to two P.M.

THIRD SESSION.

The third session of the Section on Stomatology was called to order at 2.30 P.M. by the Chairman, Dr. A. H. Peck.

A paper entitled "A Comparative Study of the Attachment

of Teeth," by Dr. Frederick Noyes, of Chicago, was read, and was discussed by Drs. Talbot and Latham.

Dr. E. A. Bogue, of New York, read a paper entitled "Observations on some Recent Cases of Orthodontia, with Illustrations." The paper was discussed by Drs. Talbot, Latham, and Williams, and Dr. Bogue closed the discussion.

Dr. G. Lenox Curtis, of New York, presented a paper entitled "Electric Ozonation upon Neuralgia." Discussed by Drs. Williams, Bogue, Latham, Eames, and Knight, and Dr. Curtis closed.

Dr. William Knight, of Cincinnati, read a paper entitled "The Modern Dentist from a Medical Stand-Point." The paper was discussed by Drs. Baldwin and Rhein, and closed by Dr. Knight.

Dr. G. F. Eames, of Boston, read a paper entitled "Oral Hygiene." Discussed by Drs. Latham, Talbot, Baldwin, Rhein, and Brown, and closed by Dr. Eames.

On motion, the session adjourned to Thursday, June 12, at two P.M.

FINAL SESSION.

The final session of the Section on Stomatology was called to order at 2.30 P.M. by the chairman, Dr. A. H. Peck.

Dr. Charles Chittenden, of Madison, Wisconsin, read a paper entitled "The Legal Status of the Term 'Reputable,' as applied to Dental Colleges." The paper was discussed by Drs. Brown, Rhein, Baldwin, Talbot, Williams, Peck, and Eames, and Dr. Chittenden closed.

Dr. A. E. Baldwin, of Chicago, offered the following resolution, which was adopted:

Resolved, That the Stomatological Section of the American Medical Association heartily endorses the decision of the Wisconsin Supreme Court as to the judicial powers of the State board as to the determination of what constitutes "Reputability;" and we heartily recommend this decision to the National Association of Dental Examiners as a basis for establishing professional reciprocity in our grand country.

Dr. G. V. I. Brown, of Milwaukee, Wis., read a paper entitled "General Nervous Manifestations in Relation to the Jaws and Teeth." The paper was discussed by Drs. Baldwin, Williams, Talbot, Rhein, and Eames, and Dr. Brown closed the discussion.

Adjourned.

[The papers alluded to in the minutes will appear, with discussions in regular order.—Ed.]

Editorial.

PROFESSIONAL RECREATION.

THE mid-summer season brings to all workers a desire to throw off the trammels and grind of daily labor and seek somewhere on mountain, by lake or ocean, a change for a few days or weeks from the incessant treadmill, the lot of the majority. The strenuous life of the modern world stands in constant antagonism to mental and physical recuperation. Even the restful hours of sleep must be invaded in order that ambition may be satisfied. Night is turned into day and day into night, that the activities of the world may be in constant motion.

The question is oftentimes suggested, What is to be the end of all this? Is it possible for the human mind to continue this incessant strain? Will there not come a period when the mental faculties, overburdened, will degenerate in individuals and nations, and civilization suffer a relapse and reversion to original conditions? The lessons of history are full of meaning in this direction, and those who can grasp the profound significance of this may readily prophesy that the present era, marked as it is in progress, may be simply the precursor of another in which mental decadence may be the lot of the, at present, advanced civilizations.

These thoughts, while somewhat pessimistic, are worthy of greater elaboration than it is possible to give here, for they include the often-discussed topic, the rise and fall of nations, but they should receive consideration by those in our profession who labor from early morning to late at night, day in and day out, and imagine they are doing the best possible for themselves and their families. It is a fatal mistake, and one that many dentists are constantly making.

There are but few occupations more injurious to health, when care is not taken, than dentistry,—certainly not among the so-called professions. The confinement in unhealthy environments, the continual mental and physical strain, the exacting character of the hourly and daily operations, will sooner or later break down the most vigorous constitution if continued without systematized inter-

ruptions. The penalty of continued violations of natural law must be paid to the uttermost farthing.

Will the short respite taken during mid-summer prove sufficient to maintain a healthy equilibrium? This will greatly depend upon how this is improved, and it is difficult to propose any method of recreation that will suit all conditions. We are all differently organized, mentally and physically, but it may be assumed that to the dentist any change that takes him out of his daily surroundings will be beneficial.

In the opinion of the writer it is a mistake to transfer the busy man of affairs to some secluded spot where nothing exists to attract attention but the beautiful mountain scenery, and nothing to fill up his hours but a game of whist or billiards. The experience becomes an unendurable monotony, with a break-down or an incessant feeling of acute depression as a result of this misdirected effort. Neither the mind nor the body, while constantly in training, can suddenly cease the hourly activity and lapse into perfect indolence, without danger.

The dentist belongs to the before-mentioned class. When first out of his cage, he feels the joyous freedom from responsibilities, but this is not lasting. He has been trained to a system, and he cannot longer be happy without it. At first the feeling is to get away from people. He resorts, by inclination, to the mountains or secluded sections. He thinks he needs most to commune with nature without any of the frills of civilization. Is this the best for this class? The life of the average dentist is too much secluded, not so much from people, for of these he sees too many, but from that broader world of which he must know to avoid falling into the narrow ruts of his own constantly ploughed field. He must get out upon the level sward, that he may become more appreciative of the world with which he is surrounded.

The thoughts heretofore given must have frequently entered the minds of the dental fraternity in all our large cities, for there more than elsewhere has the fact that the dentist needs a change grown from year to year, until few offices are to be found open during August, and many close through the two mid-summer months. In the smaller towns and villages it is surmised that the work goes on continuously throughout the year.

The unwisdom of this becomes apparent to the individual when too late to be remedied, and long before threescore years and ten

have been reached he has become prematurely aged and frequently a confirmed invalid.

Dentistry properly followed is not an unhealthy occupation. The sanitary conditions of the office must be carefully guarded, and then the individual should, with equal care, guard himself. He should never allow the temptation to overwork to dominate him. Many in the memory of the writer have filled early graves because of the insane desire to cut the hours of sleep and make the day of work from fifteen to twenty hours long.

The remedy for this seems to be to have fixed hours for labor and hours for recreation. While the summer holiday is excellent, the daily periods of cessation from labor are better. An active walk in the sun for an hour in the morning, before commencing the serious tasks of the day, is very invigorating, and a half-hour in the sun at mid-day will stir the circulation and prove an excellent antiseptic antagonist against the multitude of micro-organic elements contracted during the morning's work. Then close all labor at a fixed hour in the afternoon. The country practitioner will naturally say, If I follow this advice, what will become of my mechanical cases? These must be prepared in the evening. This is unquestionably one of the serious features of the dental practice in small places. It has been largely overcome by city practitioners, but no remedy has been found for those isolated from the active centres. The practice there ordinarily will not warrant the expense of an assistant, and he of the smaller place must do the work himself.

The time will come, indeed is already here, when dentistry will be divided into specialties. These will be classed as operative dentist; the general dental mechanician, who will take all cases of prosthetic work and assume the responsibility of them in the mouth; the "bridge-worker," who will confine his labor to that important branch. The oral surgeon will do nothing but care for the important surgical operations and the administration of anæsthetics, and eventually, doubtless, oral prophylaxis will be cared for by men and women, confining their labor exclusively to removing accretions upon the teeth. These all have now a place with the exception of the last, and when fully established the hours of labor need not be prolonged to the detriment of health, as at present.

The present month of August will find a large number taking advantage of the period to gain relaxation by mingling in the vari-

ous conventions in this country and Europe, some of which will have ended their labors before this reaches our readers. This is beneficial, but is not all that is desirable. To what extent these conventions may benefit dentistry is, at this writing, problematical. In all probability the effect, if any, will not be immediate. Great changes are not to be expected or desired. It is the general uplift that has been given it and which will continue to be given by these annual gatherings that makes their coming together of vital importance.

These mid-summer months are not productive of the "silly season," as some choose to regard them. They may be all of this to many, but to those who are wise they may be made a period of recuperation, mentally and physically, and thus add new life to the individual and additional vitality to the dental profession, for without an improvement in the minor parts advancement is hopeless for the entire body.

"A NEW DEGREE NEEDED.

"WHAT is needed is the degree of doctor of achievement, not exactly a mantle of charity, but a hood and gown that can be put upon men who do things, achieve distinction and large results in lines of effort other than philosophy, theology, law, music, literature, and the humanities. These established doctorates have been stretched to meet the desire to honor men whose remote relationship to them compelled the straining. The demand is for a degree to reach out beyond the old scholastic conceptions of the realm of learning into the new world of education that comes through experience and accomplishment, a learning that is real, and that is both helpful and substantial. The colleges have long exhibited their disposition to ally learning and progress, to put the evidence of their recognition upon those who achieve results. Let it then be done fittingly, with more of consonance than is sometimes possible under the limitations of the situation as it exists.

"Finally, let it be kept in mind that the doctorate of achievement would cover the accumulative accomplishment, and so provide a place for benefactors upon whom other degrees would rest with humiliating awkwardness. Here is not the least of the arguments in its favor, let it be said, when every college in the land confesses that its greatest need is money."—*Springfield Republican*.

The foregoing, sent by a friend, and taken from a Massachusetts journal, is so suggestive that it is given a prominent place in

this number. It also enables the writer to correct some misapprehension in the minds of several correspondents in relation to the article in the July number in which the conferring of honorary degrees, so common at this season of the year, was sharply criticised.

The position of the writer is simply this. He is not opposed to conferring degrees other than professional, but is decidedly in opposition to the use of the older degrees to fit modern conditions and modern progress.

There can be no objection to the conferring a degree that indicates achievement. It is the one thing needed. The degree conferred on Professor Miller expressed this, and it was, therefore, regarded as one worthily bestowed, honoring the giver and receiver. To confer the degree of LL.D. upon a man simply because he has donated millions to a university, or has done something directly or indirectly in the interest of universities and colleges, is, in effect, to lower the value of all degrees and to make those of an honorary character a byword and a reproach.

When a man or woman has done something that adds to the world's knowledge or its comfort, there should be a degree made to fit the work performed. Let the old degrees stand, for they have their place and the world cannot well dispense with them, but let them be lifted from the mire with which they are fast becoming smirched.

It would be well if the various universities and colleges would take this matter into serious consideration and arrange degrees suitable to all forms of achievement, and then let these be the prizes to be given for an unselfish devotion to works that mean something for the progress of the world.

Domestic Correspondence.

NEW YORK LETTER.

TO THE EDITOR:

SIR,—Notwithstanding the heated term, a goodly number met at Dr. C. D. Cook's office on June 3, which was to be the last dental meeting of The New York Institute of Stomatology until the autumn. Several interesting papers were read and discussed. Dr. D. A. Fuller gave a brief synopsis of an interesting case in practice, which, briefly speaking, was in relation to the advisability and beneficial results in the use of quinine in indicated instances.

Dr. W. M. Whitlock described his manner of opening and cleansing root-canals, which was surely lucidly explained and clearly demonstrated by the aid of different instruments used for that purpose. It was the general opinion of the many gentlemen present that Dr. Whitlock's method was certainly a scientific one.

Dr. J. Morgan Howe, the honored president of the society, read another interesting paper, entitled "Prevention of Decay." A paper of this import and value must be carefully read and mentally digested to get the real essence of it; suffice it now to say that Dr. Howe's excellent paper, while conservative, uttered warning notes to those advocating "extension for prevention," but rather recommended that our efforts be directed in the line of saving tooth-structure by thorough prophylaxis and conservative methods in filling, instead of wholesale trimming of tooth-structure to attempt to prevent future decay.

After the interesting discussion following the paper, the meeting adjourned until autumn, after partaking of a collation, which was enjoyed through the genial hospitality of the host.

"LOCHINVAR."

Miscellany.

ARSENICAL POISONING CURED BY ORTHOFORM.—I had a case of acute arsenical poisoning with the conditions present so familiar to all. With a spoon excavator I removed the blackened gum tissue, syringed the parts with a warm antiseptic solution, soaked the gums and surrounding tissues with dialyzed iron, and applied a twenty-five per cent. unguent orthoform. The pain in this case was the severest that I ever saw, and I must admit being astonished when the patient returned on the following day and reported that the pain had ceased and had not returned. Relief came within twenty minutes.—A. D. KYNER, *Items of Interest*.

DIE AND COUNTER-DIE OF MELLOTT'S METAL.—Dr. A. H. Davis, in the *Atlanta Dental Journal*, recommends painting the surface of the die with a thin coat of whiting and water to prevent adhesion. It is then dried with a blast from the blow-pipe. The counter-die may be poured reasonably hot. The parts separate readily.

[If No. 4 tin-foil be pasted over the die and pressed closely in contact with a soft piece of rubber and then dried, the die and counter-die will separate readily. If another coat of the paste be put over the tin next to the counter-die, the tin will not adhere to the counter-die. If this be not done the composition of the metal will be gradually changed by the addition of the tin.

The paste used is ordinary paste sold at stationery stores.—McCLAIN.]

BURLESQUE ADVERTISING AS A MEANS OF EXPOSING FAKIRS.—The dental parlors at Altoona, Pa., became so extravagant recently in their promises and advertisements that several of the reputable dentists of the city issued an unsigned and clever burlesque advertisement, which it is said had a wholesome effect in enlightening the community as to the methods and promises of fakirs.—*Dental Digest*.

A METHOD OF MAKING EUCALYPTO-PERCHA.—Dr. W. F. Green first dissolves gutta-percha in chloroform, allowing it to stand a sufficient time to become thoroughly dissolved. Eucalyptus oil is then added to the chloropercha, and the chloroform is allowed to evaporate through antiseptic gauze. More eucalyptus oil is gradually added until the mass is of a proper consistency. While this method is not new, he claims that by so doing he gets the gutta-percha into a more finely comminuted form than could be done by the simple use of eucalyptus oil. By the aid of the microscope the mass to all appearances is much more homogeneous than is chloropercha.—*Review.*

HOW TO SPLICE ENGINE BANDS.—The manner in which most dentists splice their bands is, to say the least, a very clumsy one. It takes considerable time to make it, it is not very strong, and never runs smoothly. The splice which I recommend is made very quickly, makes a strong even splice, and runs smoothly; also the harder you pull on the band the stronger it holds. The instrument, which I shall call a needle, used in making the splice is made of piano wire, bent in the form of a hair-pin. The free ends are inserted in a wooden handle and fastened so that they will not pull out, allowing the bow end to extend about two and one-half inches from the handle. The sides of the bow must be bent near enough to allow it to pass easily through the centre of the band.

To make the splice, measure the exact length the band must be when spliced, mark it, then cut off the band, say, seven inches longer. This extra length is taken up in the splice. A splice six inches long is stronger and runs smoother than one four inches long. Unravel about an inch of each end of the band. Take the needle and pass the bow into the band where you marked the end to be, then pass it through the band one-half of the extra length and then out again. Take the other end of the band and insert into the bow of the needle just enough to hold, and pull it through and out where the needle first entered. Treat the other end of the band in the same way as the first and draw the free end through. Smooth out the splice, and cut the ends so that they will come inside the band, and your splice is finished.

If you wish to make the splice smoother, roll it between two pieces of wood.

If the band has a core, it is more painstaking to make the splice, yet it is easily done. First draw out the core from each end the length the splice is to be, say six inches, and so manipulate it as to have the ends come inside the band exactly where the core has been cut.

If you are not particular about this, there will be a weak spot at each end of the splice. With pains in the making you will hardly be able to detect the splice after it is finished.—GEO. A. MAX-FIELD, *Catching's Compendium*.

Current News.

HARVARD DENTAL ALUMNI ASSOCIATION.

At the thirty-first annual meeting held June 23, 1902, the following officers were elected for the ensuing year:

President, Luther D. Shepard, '79, Boston, Mass.; Vice-President, Charles E. Perkins, '90, Brockton, Mass.; Secretary, Waldo E. Boardman, '86, Boston, Mass.; Treasurer, E. Proctor Holmes, '88, Boston, Mass.

Executive Committee.—Waldo E. Boardman, '86, Boston, Mass., Chairman *ex-officio*; William P. Cooke, '81, Boston, Mass.; Ned A. Stanley, '84, Boston, Mass.

The Council is composed of the officers of the Association.

WALDO E. BOARDMAN,
Secretary.

COLORADO STATE DENTAL ASSOCIATION.

At the sixteenth annual meeting of the Colorado State Dental Association, held in the Alta Vista Hotel, Colorado Springs, June 17, 18, and 19, 1902, the following officers were elected for the ensuing year: President, H. B. Hayden, Colorado Springs; Vice-President, E. W. Varley, Pueblo; Secretary, W. A. Brierley,

Denver; Treasurer, Wm. Smedley, Denver. The candidates elected for appointment by the governor on the State Board of Dental Examiners were W. H. Hall, Denver; H. F. Hoffman, Denver; M. H. Smith, Denver; Theodore Ashley, Cannon City; Geo. R. Warner, Grand Junction.

The next meeting will be held in Pueblo, June 16, 17, and 18, 1903.

TEXAS STATE DENTAL ASSOCIATION.

THE Texas State Dental Association met in the city of Waco, May 13, 14, and 15, 1902, and held a very fine meeting.

The attendance was large, and the papers and clinics were of a high order.

The next meeting will be held in the city of Houston, May, 1903.

The following officers were elected: President, Dr. J. G. Fife, Dallas; First Vice-President, Dr. Thos. P. Williams, Houston; Second Vice-President, Dr. R. D. Griffis, Paris; Secretary and Treasurer, Dr. Bush Jones, Dallas; Curator of Museum, Dr. A. F. Sontag, Waco.

Executive Committee.—Dr. W. R. Rathbone, Chairman, Cuero; Dr. A. J. Beville, Waco; Dr. C. O. Webb, Crockett.

G. V. BLACK DENTAL CLUB.

AT the annual meeting of the G. V. Black Dental Club, of St. Paul, held at Austin, Minn., June 20, 1902, the following officers were elected for the ensuing year:

President, Dr. S. Bond, Anoka, Minn.; Vice-President, Dr. J. M. Walls, St. Paul, Minn.; Secretary and Treasurer, Dr. Robert B. Wilson, St. Paul, Minn.

Board of Censors.—Dr. A. C. Searl, Owatonna; Dr. G. F. Andrews, St. Paul; Dr. A. M. Lewis, Austin.

ROBERT B. WILSON,
Secretary and Treasurer.

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No. 9.

Original Communications.¹

THE EMBRYOLOGY OF THE DENTAL PULP.²

BY R. R. ANDREWS, A.M., D.D.S., CAMBRIDGE, MASS.

At the invitation of the secretary of our Section to present a paper on some subject connected with the dental pulp, I shall consider at this time the dental pulp in its embryological aspect. Such an aspect appeals to me the more strongly from the fact that I have given special attention in earlier research work to dental embryology. In a general way I shall consider the growth of the dentine germ from the earliest signs of its development, the formation of the dentine from the germ, and lastly the fully formed and functionally mature pulp. This subject may not offer anything that is particularly new, but there are several points that I have recently been trying to clear up, and a discussion of them may prove of general interest to the Section on Stomatology.

At about the end of the second and the beginning of the third month of intra-uterine life, in the embryonic tissue of the jaw, we

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Section on Stomatology of the American Medical Association, at Saratoga Springs, June, 1902.

shall find the primary specialization of cells which are to form the dentine germ, and from which come the cells which afterwards form the dental pulp. It is in no special zone or layer of this connective tissue that the dental germ is formed, but the formation seems wholly influenced by the contact with an enamel-organ. In the presence of this organ the connective tissue cells become stimulated and active. It would appear as though they offered a resistance to its further growth, and from this resistance the enamel-organ was made to expand, thus becoming flattened and broadened. The stimulation and activity of the cells is shown by their rapid growth, which clouds the part at this point, becoming a dense focus of new growth. The tissue is seen to be actively building itself up, and this results in the formation of a papilla, around which the enamel-organ is growing like a cap or helmet. This process of new growth is a beautiful illustration of anabolic metabolism. The papilla grows to a cusp or cusps, and now becomes the dentine germ. At the end of the third and at the beginning of the fourth month the dentine germ is rather a homogeneous structure. Round cells are very numerous; they have relatively large nuclei and nucleoli. As the germ assumes the cusp shape, multiplication of cells takes place around the blood-vessels, which have grown into the base of the germ, and a jelly-like layer has formed around its outer surface. It will be found that the dental germ will grow into the depressions of the enamel-organ of a bicuspid or molar tooth, and these growths will become the dentine cusps. We also notice that the different layers of the enamel-organ are now formed, and that the sacculus is forming its layers about both enamel-organ and dentine germ. When this process is completed, these are enclosed in a sac, and thus become a dental follicle. Within the area of the dentine germ are contained all of the cells which shall develop later into the mature dentine and into the pulp of the fully formed tooth.

The round cells around the rim of the dentine papilla appear to be in a protoplasmic substance, sometimes called a zone of amorphous material. It is a hyaline structure on the outermost surface of the germ. The cells just within become richer in protoplasm, and many processes are seen to be forming from them. They are becoming branched cells. A little later the cells at the surface grow larger and assume a columnar shape, which may be caused by mechanical compression. We also see just within this layer of

cells some that are pear-shaped, conical, cylindrical, and spindle-shaped. There are some authorities who have spoken of what they call elementary cells on the outer layers, and from which, they say, the odontoblasts are formed, but I have never observed anything but globular masses that are not cells, and which are found in the protoplasmic substance of the rim spoken of above. At the beginning of the fifth month these cells on the surface are seen to be undergoing a histological differentiation, as stated above, and are becoming specialized or formative cells, the odontoblasts. They are membraneless, and little more than masses of protoplasm, which are seen to be filled with great numbers of bright glistening globules of different sizes. The so-called "conjugation cells" of the German authorities are what I believe to be the pear-shaped fibre-forming cells. These are seen to be sending their processes into the intercellular spaces of the odontoblasts, and thus I believe the fibre to be formed. At this time dentinification is about to begin. How does this process of calcification take place? This we do not wholly understand, nor do we understand the chemical or physical properties of the building-materials. At this time the blood-supply is evident, and at the seventh month there is a perfect vascular system consisting of arteries, veins, and capillary net-work.

As I have said, the details of the vascular mechanism by which the odontoblasts are supplied with lime necessary to form calcified structure have not, as yet, been clearly worked out. Capillaries near the formative cells do not communicate directly with the cells, and must therefore pass the lime through the intracellular substance. The inorganic calcium which is necessary manifestly cannot be supplied as such by the organic formative cells, but must make its initial entrance into the body from without. This entrance in the foetal state must necessarily be through the maternal circulation, and after birth it must come from the food which passes through the alimentary canal. From here it must be carried to the specialized formative cells which superintend the process of dentinification, and there is but one such distributor,—the blood-supply.

After the absorption of food into the circulation by the intestinal epithelium, chemical analysis of the blood shows the presence of two calcium salts,—the insoluble phosphate ($\text{Ca}_3(\text{PO}_4)_2$) and the soluble carbonate ($\text{CaH}_2(\text{CO}_3)_2$). It can be readily understood that the soluble carbonate can be absorbed, but how the insoluble

phosphate can be absorbed is still a mooted question. It is believed, however, that it is absorbed in that same loose chemical combination with proteid in which it is found before absorption in the casein of milk and the yolk of egg. Chemical analysis has shown these two foods to be very rich in calcium. The casein and caseinogen of cow's milk, according to Bunge, contains more calcium to the litre than does lime-water. Caseinogen, according to Soldner, contains 1.55 to 2.36 per cent. of calcium. The proportion of calcium in combination with the proteid of egg-yolk has been found to be about the same.

The loose calcium-proteid combination, arriving, during its passage through the dental pulp capillaries, within the radius of the special physiological motive force of the odontoblasts, is acted upon by this vital force, and thus becomes ingested by the cells. We believe that it here becomes modified by the cytoplasm of the cell, by a chemical combination with its organic substance, and in this way calcospherites are formed. Within the cells, these globules seem to have the property of coalescing, and as they are placed by the cell against the surface to become calcified, they are found to be in many cases large globular or irregular-shaped masses. These masses, merging with others, smooth out and form the layer always found between organic and calcified tissues, where the process of calcification is taking place. This is the layer known to investigators as border-land tissue. Hoppe-Seyler asserts that the lime which hardens bone, dentine, and enamel is a double salt of carbonate and phosphate of calcium, having the formula $\text{Ca}_{10}(\text{CO}_3)_3(\text{PO}_4)_6$, one equivalent of calcium carbonate, with three equivalents of calcium phosphate.

The various processes of dentinification have been demonstrated to me by many hundreds of sections cut from developing teeth at a time when calcification was beginning, and from tissue prepared as near the life of the animal as it could be, and prepared with the least possible manipulation consistent with perfect specimens.

The formation of dentine from the dentine germ proceeds substantially in the following manner: We notice that the hyaline substance on the rim of the germ, which is a protoplasm basis substance that surrounds the outer ends of the formative cells, is filling up with glistening, irregular-shaped masses that appear semisolid, many of them being globular, but all tending to form a layer of substance which is involving a portion of the outer ends

of the odontoblasts. We notice that these cells themselves are filling with bright, but minute, globular bodies which are the calcospherites, that seem to have their origin within the cytoplasm of the cell; these grow larger, probably by merging with others, as they are conveyed to the calcifying surface of the layer of the rim. Mr. Mummery, of London, has described a net-work of connective-tissue fibres which were seen in bundles between the odontoblasts, and even enveloping them and passing out from them, forming a net-work just in advance of the main line of calcification. This net-work of fibres, the fibres of Mummery, serve, during the formation of the layers of dentine matrix, as a scaffolding, among which the gelatinous tissue and the calcospherites are deposited. I have described a similar net-work in developing enamel in a paper read in Berlin in 1890. In this way the calcifying layers are formed, until the dentine is completely calcified. This process is not continuous, but occurs in laminæ, as indicated by the contour lines seen in the forming specimens that have been stained. The layer which is forming is a new product, in which the lime is held in some sort of a chemical combination. In this condition it is known to be calcoglobulin, and a further chemical change forms it into the fully calcified structure. Thus the dentine is formed, layer by layer and stage by stage. We cut our sections, if we are studying the forming dentine, at a period of growth covering one of these stages, and we do not always get the same picture. Sometimes our section will show the globular formation stage, sometimes in the stage that shows the continuous band of calcoglobulin, and sometimes, though rarely, we get a picture that shows no appreciable layer between the odontoblasts and the calcified dentine. Sudduth has stated that the thickening of the dentinal wall is accomplished by a single layer of odontoblasts which begin the process, and these same cells persist throughout the life of the pulp. I cannot, with my present knowledge, agree with this statement, for I have seen earlier layers of odontoblasts being apparently used up, or engulfed within the layer forming, and other formative cells developing from the cells of the pulp-tissue just within. Oblique sections of forming dentine, and of the layer of border-land tissue, also show parts of the formative cells which become fused with it. Dr. Frank Abbott makes the statement that he has seen from time to time dentine-forming cells replaced by others, which, he says, are seen to be forming at their inner side. The layer of calco-

globulin has been called collagen; I do not believe that it is collagen. It was also formerly known as the "membrana preformativa," but this is not a membrane. The layer of odontoblasts was also known as a membrane, the "membrana eboris;" neither is this a membrane.

Morgenstein calls the layer of border-land tissue "dentinogenous substance," and thinks that it is produced by the odontoblasts giving up part of their substance; that a segmentation of the odontoblasts has taken place, somewhat as the enamel-rod is formed into segments.

There appears to be a lack of knowledge about the dental fibre, its canal, and the so-called sheaths of Neumann. We speak of the dentine tubes, or of the dentine tubuli. A tube is any long and hollow cylinder,—a pipe; tube or tubulus is certainly a misnomer. We should speak of it as the dentinal canal or dentinal canaliculus, for a canal is a duct in a body for the passage of fluids, a duct through which anything may be conducted. If we examine the cross-section of the developing tooth again, where only a narrow layer of dentine has been formed, we see on the edge of the fully calcified layer, between it and the formative cells, the transparent, hyaline layer already spoken of. It is somewhat irregular, as if it were formed by the merging of globular masses, a transitional tissue, mind you, which a further stage in the hardening process will completely calcify. It then becomes matrix or basis substance. It is formed by microscopic globules, calcospherites, within the odontoblasts. These cells appear to superintend the laying of the globules which are arranged in the substance of the gelatinous tissue, a layer of which has been formed by the pulp to receive them; they are deposited against the fully calcified matrix within the fibres of Mummery. This is the hyaline layer already spoken of. It is a layer of border-land tissue that is singularly indestructible in acids or in caustic alkalis. I have already stated that there appear to be two kinds of cells concerned in the formation of dentine,—one, a fibre-forming cell, with a long process running into the canals; the other, a matrix-forming cell, the true odontoblast. This is usually square and abrupt against the dentine, and the process which it appears to have, in many cases, I have found, belongs to the fibre-cells deeper within the pulp-tissue. As the dentine layer forms, the fibre of the fibre-cell lengthens, and against the surface or sides of this lengthening fibre the same hyaline layer is left

uncalcified, as is found against the forming matrix next the formative pulp.

We frequently see two fibre-cells merged into one, caused by the lessening circumference of the forming dentine; they have merged together, one losing its identity completely at that point; and so it is with the odontoblasts. It appears to me clear that all the branching of the canaliculi must be from the merging of these fibre-cells, thus forming branches of the main fibre. The so-called sheath, then, is a transition tissue, probably the same as the tissue which remains uncalcified in the interglobular spaces in dentine. It is in no sense a separate tissue, and sheaths can only be demonstrated after full decalcification, when acids have completely destroyed the matrix. In cross-section of the canals in dentine this border-land tissue can be stained by a preparation of nitrate of silver. It acts precisely the same as it does on the hyaline layer of forming dentine,—it stains it black. Both tissues are matrix tissues in a partial state of calcification, and full calcification will take place in this border-land tissue against the fibre as age comes on, when the dentinal canals are found to be much smaller in diameter than they are in the young tooth. We may assume, then, that the so-called sheath of Neumann is but a transitional tissue only partially calcified, which may fully calcify in the future. It lines the canals in the dentinal matrix, and is only a sheath when acids have destroyed its adjoining more fully calcified substance.

In these various processes, we have considered the calcification of the deciduous central incisor. The process begins about the fourth month, the crown is nearly formed at birth, and the tooth root fully formed at the eighteenth month. Thus far it has been my purpose to describe the various processes of dentinification taking place before and after birth, as demonstrated by research work. In describing these, it has seemed necessary to repeat descriptions in order to make the subject-matter clear. In concluding, a brief description of the germ-tissue remaining after full calcification has taken place will be given. This germ-tissue now becomes the normal pulp, which is the source of nutrition and nerve-supply to the tooth. The main mass of this organ is made up of a semigelatinous matrix thickly studded with cells which do not in themselves form a continuous tissue; that is, they are not in contact with each other. They are embedded in a jelly-like substance, in which many fine fibres are seen. In the centre of the pulp-tissue the cells are

less numerous than they are near the formed dentine. The cells against the dentine are no longer square and abrupt against it; they are now oval or pear-shaped, with the pointed ends conveying a fibre to a canal in the calcified matrix.

The study of many sections of the pulp of fully formed teeth has led me to believe that the pear-shaped cells fringing the outer surface of the pulp, and having fibres running into the canals of the dentine matrix, are not cells having the same function as did the formative cells, or odontoblasts, which were square and abrupt against dentine while it was forming. There are indications that the pear-shaped fibre-cells have a membrane, and they remain pear-shaped throughout the vitality of the pulp. When the pulp is irritated by the approach of caries, or from abrasion, or from some stimulation from without, the fibre-cells do not appear to take part in the formation of secondary dentine, the dentine of repair; but new formative cells are seen to be developing from the cells of the so-called conjugation layer just within.

Weil has described an intermediary layer just within the odontoblastic layer, which consists of a large accumulation of spindle-shaped cells, somewhat different from the embryonic connective-tissue cells of the main mass, which varies in breadth according to age. This intermediary layer represents the remains of what the Germans call the conjugation-cell layer,—a layer of reserve material, which seems to be a product of the growth changes of the pulp. I doubt if there is more than a remnant of it in adult teeth. Some authors assert that the cells in the centre of the pulp degenerate, that the nucleus disappears, and that there is a partial loss of their protoplasm. This is undoubtedly the case in older pulps which no longer show the rich ramifications that the younger ones do. Lymphatic vessels have never been demonstrated with certainty in the pulp-tissue. There is a net-work of undulating fibres which run from the root to the crown, parallel to the axis of the teeth. The interspaces between these cells and fibres being filled with a protoplasmic substance, their histological nature has not been determined. It is stated that the cells of the pulp show characteristic differentiation at different times in its life. There are three kinds of cells which have their origin from the embryonic connective-tissue cells by metamorphosis. These are round cells with large nucleus and scanty protoplasm, spindle-shaped cells, and irregularly shaped cells which have branching processes that freely

anastomose with the spindle-shaped cells and with themselves. The changes in the cells seem to begin at the periphery and proceed towards the centre of the pulp. At the periphery we have the pear-shaped cells, then the spindle-shaped conjugation layer of cells, then the spindle-shaped and irregularly shaped cells with their anastomosing processes, and, lastly, the connective-tissue elements in the central portion of the pulp, which seem to be scant in protoplasm. These cells are not very numerous, and are in a jelly-like matrix. The blood-vessels enter at the apex, the trunk vessels resting near the centre of the pulp. Sometimes as many as three arteries are seen to enter the apical foramen. They then divide into innumerable branches, and form an extensive net-work of capillaries near the layer of the pear-shaped cells next the formed dentine. There are numerous veins also found, and these are somewhat larger than the arteries. Black tells us that the blood-vessels of the pulp are remarkable for the thinness of their walls, and that the smaller veins seem to be nothing more than endothelial cells which are placed edge on edge, or margin on margin. The arteries have a circular and longitudinal layer of muscular fibres, but these are very thinly distributed. The capillary net-work is so rich near the pear-shaped cells in the forming tooth that, when they are injected and shown under the microscope, there seems to be little room for any other tissue. The nerves of the pulp are many, the fibres being medullated and non-medullated, which enter the pulp through the apical foramen in bundles of various sizes. As they pass into the pulp they break into branches and form a rich net-work, a delicate plexus of fine nerve-filaments next the outer pear-shaped cells. It is not known just how these communicate with the fibril. It has been asserted that the finer fibres may pass between the pear-shaped cells, and wind themselves around the dentinal fibrils, passing thus into the canal. Sudduth inclines to the view that the terminal fibres unite with the pear-shaped fibre-cells, and that sensation is thus transmitted by the dentinal fibril to the terminal branches of the nerves. In form a mature pulp is shaped nearly the same as the tooth to which it belongs.

PORCELAIN INLAYS.¹

BY EDWARD C. BRIGGS, D.M.D., BOSTON, MASS.

ALTHOUGH I am down on the list as reading a paper on "Porcelain Inlays," to be followed by other gentlemen in contributions upon the subject, and would therefore be expected to give something more than a record of practice, nevertheless I shall not go into the history of inlays, but shall make my paper merely a record of personal experience. All of us who have been in practice a score or more of years have made during that time a greater or less number of inlays, and, while the method of grinding out inlays from porcelain teeth or fitting the somewhat crude bits baked from plaster impressions was laborious, and took a great deal of time, I think we all have felt that in the cases where it was tried it paid and was well worth all the trouble. Now, I am not going to pose as a perfectly successful operator in porcelain inlays. I have had failures, plenty of them,—who has not, with whatever material he may use?—but I feel that the aim sought for and the results often reached fully justify one in working along these lines, ever striving to become more and more perfect. In other words, the principle seems, to the writer, to be right.

What Dr. Jenkins has done for us is to make the method easier and of more universal application, without sacrificing the naturalness of the finished product, as has been the case with other confusing enamels.

As before intimated, porcelain inlays or porcelain fillings are not new to the profession, and the writer has personal knowledge of successful ones of fifteen and twenty years' standing. When *properly* and *successfully* made, by whatever method, they have stood the test of time, restoring contours, retaining the natural appearance of the teeth, and preserving them from decay as well as any other filling-material. As compared with such fillings, supposing them to be perfect, Dr. Jenkins's inlays offer no advantages except in the method of producing, which method is made easy by his having invented, or, rather, compounded, an enamel which while retaining the appearance of natural teeth can yet be

¹ Read before the American Academy of Dental Science, Boston, Mass., March 5, 1902.

used by a low heat insufficient to melt thin gold. And even here, with Dr. Jenkins's system, we can get both good and bad results, and practice and experience count for as much as they do in other matters.

In taking impressions one must see to it that the cavity will "draw" well, as you would in making any die. This is common sense, no one man's method. Any contact of the burnisher with the gold tends to draw it away from the tooth (a helpful fact in releasing the gold from the cavity in some cases), and Dr. Jenkins's direction to use punk between burnisher and gold is a most valuable one. Having the impression, we next select the color; and here, of course, one gains by experience, and we learn that in approximal cavities the color selected should be a little lighter than the natural tooth, except where there is a thin enamel wall also exposed to view under which the cement will lie; that in labial cavities the porcelain should be a shade lighter than the tooth in long-lipped people, deeper in color in short-lipped people; that the cement we use changes the whole aspect of things according as it is light or dark.

Then comes the bedding of the gold impression in powdered asbestos, careful that each portion of the gold is supported by the asbestos, and then the fusing. Much has to be learned here. Too rapid fusing makes the inlay porous, and then woe to you if you have any chance grind off the outside glaze. Too long fusing bleaches out the color. In gas furnaces you may gas the filling. All these conditions are common to all porcelain work, and not the special property of the Jenkins enamel. The Jenkins enamel is unquestionably weaker than higher-fusing porcelain, but except in corners of very thin incisors a Jenkins inlay properly baked, the glaze not ground off in any part, and of reasonable thickness, will stand all the wear and tear that may be put upon it.

As to the means of fusing, one can succeed equally well with the Jenkins gas, the Ash electric, or the Hammond electric furnace, and, I presume, many others.

We are now ready to set the inlay, and if thick enough to admit of it (and it should be), a groove should be cut on two sides to help in the grip of the cement. The writer has used chiefly Ash's and Howard cement, although the inlays of a dozen years ago were set in Weston's insoluble cement.

Of course, the porcelain is to be tried in, and if necessary

ground to suit the bite or to make the edges flush with the tooth. This grinding is, however, to be deplored, as it too often discloses a fatal porosity, while it is possible to produce inlays with a very small per cent. of them requiring grinding and fitting. Having smeared the surface of the cavity and the inside of the porcelain with thin but *thoroughly mixed* cement, we push the inlay to place with a soft wood stick, using all the pressure one is capable of. And now let us be patient and wait for the cement to harden, realizing that a half-hour now is worth years in the security of the joint. If the rubber dam is on, one can tie a string around it close to the cutting edges of the teeth, and then, cutting the dam off at the string, have the tooth in a neat rubber bag, with which the patient can comfortably wait in the reception-room or even go about his business, pulling off the rubber at a stated time.

To what are the failures due? Some cases have been referred to, but there will be no harm if we repeat. In the first place, we have the shape of the cavity to consider, and it is not fair to expect a porcelain inlay, even with the adhesiveness of the cement, to stick in a cavity where you would not expect gutta-percha to stay. While your matrix impression must draw well from the cavity, yet the cavity should be something more than a concave depression; and, with a clear eye to the "drawing," one must at the same time make a good square-edged, dependable cavity. Another cause or causes of failure are the disasters in fusing, before alluded to, and common to all porcelain work. Then, of course, the cement must be good, must be properly mixed (and it is surprising how few know how to mix cement), and be allowed to thoroughly harden.

The edge-strength is good if you allow it to have something better than a knife edge.

Bubbles will, of course, sooner or later disclose themselves.

There is no position of a cavity that may not be filled with porcelain, and I recall one patient who has twenty-one porcelain fillings. This patient presented herself with teeth badly broken down, filled with cement, and the pulps for the most part alive.

I have used other bodies, higher fusing, which, of course, give greater strength, as Whitely, Parker, Ash, but have never been able, except with Parker's, which ruins all my furnaces, to get a very natural appearance.

The records in my office show that we have made over two thousand Jenkins porcelains, and the failures have been only about

one per cent., due to unwise shaping of cavities, hurrying the setting of the cement, or grinding off the glaze in adjusting the bite,—all avoidable errors.

Properly made and properly set, porcelain fillings present a most satisfactory appearance, preserving the teeth as well as, if not better than, any other material we use.

A PECULIAR CASE OF RESORPTION.¹

BY LOUIS JACK, D.D.S., PHILADELPHIA.

IN the mouth of a woman of middle age the gingiva of a central incisor on the lingual aspect, and extending between this tooth and the lateral incisor, appeared inflamed, but without diffusion. This tissue was not patulous, as when salivary calculus exists, but was firm and slightly swollen, so that it extended somewhat lower on the lingual surface of the enamel than normal. This condition of the margin of the gum to a less extent had existed for at least a year. At the first observation it was supposed to have been caused by imperfect cleansing of the part. After instruction of the patient, as there was but little improvement of the condition, it was referred to impairment of nutrition associated with a marked gouty diathesis. On other occasions I had observed with gouty patients this peculiar state of the gingiva.

Subsequent exploration beneath the altered gingiva revealed a cavity supposed to be carious. After forcing the gum away by the expansion of a cotton pledget the cavity became sufficiently apparent to secure a careful examination, which proved it to be surprisingly deep, with a surface hard throughout and of extreme sensitivity. That this cavity had been produced by resorption of the cementum and dentine could be the only conclusion. The situation is nearly on the central portion of the lingual aspect extending in the apical direction four millimetres, transversely three and a half millimetres, with a depth of two millimetres. A considerable bay ex-

¹ Read before the Academy of Stomatology, Philadelphia, February 25, 1902.

tended under the enamel of the basilar ridge. This projecting enamel was broken down to improve access.

Treatment.—A speculum of copper was formed to correspond with the opening in the gum, which extended laterally somewhat beyond the cavity. This was so shaped that a ligature would bring it into apposition with the root at the sides and apical end of the resorbed area.

After arresting the bleeding with adrenalin, followed by alcohol and warmed air, the cavity was filled with archite, which was trimmed to conform with the root.

When it is considered that the root of this central is about five millimetres in the antero-posterior direction, the depth of this resorption endangered the pulp. It was nearly, if not entirely, exposed, as will directly be shown by the thermal reaction of that organ. On the first day of treatment the temperature-rate of the tooth was $-66^{\circ} + 116^{\circ}$ F. At the same time the normal rate proved to be $-58^{\circ} + 130^{\circ}$, a range of tolerance of 72° . The tooth was also slightly intolerant of percussion and impatient of the passage of silk, these conditions being usually associated with thermal irritation of the pulp by heat so much above the normal as is shown here. The tone of color was a little deeper and duller than that of the other central, which is not uncommon in pulp disturbance. The bottom of the cavity had been capped with a celluloid disk covered with a paste composed of zinc oxide and eugenol.

The case at first was placed under observation each forty-eight hours, when application to the gum surface on the outer aspect above the tooth of tr. aconitum rad. and chloroform, $\bar{a}\bar{a}$, was made for twelve seconds at each interview.

TEMPERATURE TABLE OF CASES.

	Normal rate.	Range of tolerance.
January 30.....	$-58^{\circ} + 130^{\circ}$ F.	72°
January 30.....	$-66^{\circ} + 116^{\circ}$ F.	50°
February 5.....	$-68^{\circ} + 118^{\circ}$ F.	50°
February 7.....	$+120^{\circ}$ F.	
February 10.....	$-70^{\circ} + 123^{\circ}$ F.	53°
February 14.....	$-64^{\circ} + 124^{\circ}$ F.	60°
Tone of color improved.		
February 18.....	$-64^{\circ} + 126^{\circ}$ F.	62°
February 21.....	$-63^{\circ} + 128^{\circ}$ F.	65°
February 24.....	$-60^{\circ} + 130^{\circ}$ F.	70°
Impatience to percussion much less.		

It will be observed that the range of tolerance steadily increased until it nearly reached that of the sound teeth.

The inflamed portion of the gingiva had been somewhat relieved by krameria diluted with water containing one grain to each ounce of zinc chloride.

In about a month after the discharge of the case the archite-lling was found to be loose, when it was replaced with amalgam without further reaction of the pulp.

NOTE.—For the diagnostic value of pulp-reaction to thermal shock see *Dental Cosmos*, vol. xli. p. 1; "American Text-Book of Operative Dentistry," p. 406 *et seq.*; "Proceedings of Pennsylvania State Dental Society," for 1898.

ELECTRIC OZONATION IN NEURALGIA.¹

BY G. LENOX CURTIS, M.D., NEW YORK.²

THE term neuralgia may be applied to all pains found in animal tissue that may be regarded as being nearly or quite in a perfect physical condition, especially if the pains have become chronic. To designate the locality of the cause of the pain, which may or may not be in the region of the pain, and leaving out what may be regarded as functional disturbance, we may mention, for illustration of my subject, facial neuralgia, gastralgia, myalgia, and pains of the pain in myelitis and pyelitis, all of which are only different phases of disturbances called neuralgia. The locality of the keenest pains may be in the parts suggested by those names, or they may be at greater or less distance. Neuralgia in and about the face and mouth is generally easily determined, but there are cases where there seem to be complications.

Other forms of pain, such as gout, rheumatism, sciatica, and lumbago, may all come under the general term of affections of the

¹ Read before the Section on Stomatology of the American Medical Association, at Saratoga Springs, June, 1902.

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nerves, and may all be treated in connection. But this would open a wider field than I desire to discuss at this time.

The pain about a tooth in one jaw may cause pain in the opposite jaw. It is well known that a defective lower side tooth often causes pain in the upper tooth. But it may be said that in cases of pulpitis, gingivitis, periostitis, and pericementitis the pains are found in the parts involved. As these latter forms of neuralgia are probably the ones that will most interest this section of medicine, I will confine my remarks mainly to them. My aim is to call the attention to the power of electric ozonation; its effect upon this disease I regard as a comparatively new phase of practice in medicine.

After three years of experimental work, I called the attention of the medical profession, in October, 1901, to it in a paper read before the Academy of Medicine, in New York.¹ In that paper the plan by which ozone may be properly made, and at the same time enable the practitioner to force it directly into and through the affected parts, was clearly set forth. I also explained its effects and gave report of cases in which the stimulating and ozonizing speedily re-established the normal functions. When nerve-force and proper nutrition are established, and equilibrium is re-established, a high condition of health is the result. I do not wish to be understood as saying that by electric ozonation a normal physical condition can be re-established in a diseased organ, such as follows the loss of tubules in chronic nephritis, abscesses of the lungs and liver, or a cicatrix in a nerve-trunk following a traumatic lesion or calcific deposit in the pulp of a tooth. But I do imply that by electric ozonation nerve-force and circulation can be sufficiently re-established in the parts to lead to health, and the parts be left in the best condition possible under the circumstances.

The mechanism that will make this remarkable element is a system of coils of fine wire, so arranged as to change the quality of the current of electricity from the street into the wonderful therapeutic agent.

One of the changes in the electric current effected by passing through the machine is increase of voltage, while at the same time the amperage is reduced, thus causing a high tension current. The

¹ This paper was published in the New York Medical Journal of January 18 and February 1, 1902.

capacity of this machine is one million volts and about one-fiftieth of an ampere, capable of producing a large amount of ozone. The higher the voltage, and the lower the amperage, the less is the degree of shock experienced by the patient. It re-establishes nervous functional activity, thus stimulating tissue repair.

The current from this machine, which seemingly has but a single pole, passes through the body and then escapes into the atmosphere, which may be regarded as a negative pole.

Among the advantages of this machine is easy handling; that is, it is easily carried about when travelling. The fact that it may be used wherever there is an incandescent current, without its being affected by conditions of the weather, is an important virtue.

Removing the cause of neuralgia generally stops pain,—for illustration, the removing of a pulp-stone, necrosed bone, an irritating filling, gas in pulp-chamber, or alveolar abscess pressure,—but there are cases that require the element of greater length of time before unanimity is established, and electric ozonation tends to shorten this time.

Among other disturbances of the nervous system that may be mentioned are those that cause hemiplegia and catalepsy. But association with other disturbers sometimes embarrasses diagnosis. I recall a case of hemiplegia, supposed to be from brain lesion, that was completely dissipated after the removal of an alveolar abscess. I also recall another case of catalepsy from the same cause. Slight irritation may not cause neuralgia when vital force is at par, but when vitality is low neuralgia in most any part of the system may continue, and lead to neurasthenia.

While investigating the cause of pain, for the purpose of giving relief, the practitioner generally believes that the pain is the result of a lesion. Should lesion not be found, I think that the surgeon should not operate. I think that the practitioner should never operate for relief until a careful and exhaustive examination of the patient's system is made and he has ascertained the full conditions of health. This examination may show that the patient is in a very debilitated condition, and the vitality so low that there is not sufficient supply of nerve-force for a high condition of health. Under such circumstances, the overworked and inflamed nervous system needs assistance, and, as pain is nature's voice calling for help, it may be regarded a blessing in disguise. To illustrate the importance of making careful diagnosis, and to show how we may

help nature, I will present two cases, recently in my practice, one in which a lesion was determined, the other in which a lack of vital force was the cause of the pain. Mr. I., aged eighty, had suffered for twenty-five years from facial neuralgia of a very acute character. All his teeth, one after another, had been extracted, without giving any abatement of the excruciating agony. Under these conditions his health gradually failed, and the paroxysms of pain became more and more intense until continued agony made his life hardly worth preserving. This was his condition when brought to me by his physician for consultation regarding advisability of resection of the lower dental nerve. Upon a careful examination, I found that his nervous system was in a very feeble condition, and with its present capabilities would not generate enough nerve-force to furnish half the vitality necessary for even a moderate condition of health.

It was clear to me that his nervous system must be awakened and made more vigorous before improvement could be seen. I suggested a course of ozonation, and the advice was acted upon. After two weeks of daily ozonation his general health had improved to a marked degree, and with this change rapidly came the gratifying result,—entire freedom from pain. This ozonation treatment was continued two weeks longer, when sound health was firmly established.

This highly satisfactory condition lasted a year, when the death of a dear member of his family caused him great sorrow, and necessitated a long and fatiguing journey by railroad. The grief and journey combined so exhausted his vitality that neuralgic pain was again felt in full force. He came to me again for treatment, was treated by the same method, and was again restored to vigorous health. He now continues to live and enjoy life free from pain.

Another case was that of Mrs. E., who had, for twelve years before I saw her, been subject to long periods of suffering from neuralgia in one side of the face. She had, one at a time, all the molars extracted without gaining relief. During the examination I asked her what had been the condition of her general health. She replied that her "health was good," but her nervous, anxious expression contradicted her assertion and showed clearly the irritable state of her system. I continued my examination, and concluded the cause to be pulp-stones in the upper bicuspids of the affected

side, and advised the removal of the pulps, or possibly extraction of the teeth. I found her vitality very low, none of the functions of her organs performing regularly, thus showing that a patient's word cannot always be relied upon in such matters. In no sense was she a well woman.

She would not consent to surgical treatment that seemed proper, but after the ozone treatment was suggested she concluded to accept it. After the second treatment all signs of pain in the parts disappeared, and after a month's treatment her general health was seemingly entirely restored, and for two months she was free from pain. But later, contracting a violent cold, and the bicusdids becoming troublesome with slight paroxysms of pain, she again came to me for relief. After several ozone treatments all pain disappeared. When last I saw her she was in good health, and had no returns of the neuralgia. I believe, however, that until the pulp-stones are removed she will occasionally have a recurrence of the pains when her vitality runs low. I may mention that previous to the time that she came to me she was considering the resection of the gasserian ganglion.

I have observed similar results in other cases.

COMPARATIVE STUDY OF THE ATTACHMENT OF THE TEETH.¹

BY FREDERICK B. NOYES, B.A., D.D.S.

THAT the teeth are not a part of the osseous system, but are appendages of the skin, supported, in man, by a special development of bone forming the alveolar ridges of the maxillary bones, is as well established as any fact concerning human dentition. The work of Oscar Hertwig, "Ueber Bau und Entwicklung der Placoid-schuppen," published in *Jenaische Zeitschrift*, 1874, established very clearly the homology existing between the teeth and the dermal or placoid scales of the ganoid, silurioid, and dipnoan fishes, both as to similarity of structure and development.

¹Read before the Section on Stomatology of the American Medical Association, at Saratoga Springs, June, 1902.

Much has been written descriptive of the teeth of various animals, their modifications of form, and attachment to adapt them to modifications of function, and various classifications of the means of attachment have been made. Of these, perhaps the best and most logical is given by Charles Tomes in his "Dental Anatomy," describing four forms of attachment,—1, by fibrous membrane; 2, by hinge-joint; 3, by ankylosis; 4, by insertion in a socket.

I wish simply to take up these various forms of attachment, and show, if possible, the comparison between them, and the evolution of the more complicated forms from the simpler. We must begin with an examination of the structure and attachment of the placoid scales and the simplest form of tooth as illustrated in the shark.

The dermal scales are composed of a conical cap of calcified tissue developed from within outward, by an epithelial organ, and corresponding in structure to the enamel. This cap is supported upon a conical papilla of calcified tissue formed from without inward, and corresponding to dentine. In the outer layer the arrangement of the fine tubules through the calcified matrix corresponds very closely to human dentine, but in the inner portions it is to be understood only by considering the formation of the dentine as progressing irregularly over the surface of the pulp and so dividing the pulp-tissue into portions enclosed in large canals, from which the fine tubules radiate. The base of this partially calcified papilla has a calcified connective tissue built onto it by the derma, which corresponds to cementum forming the basal plate, spreading out more or less in the connective-tissue layer of the skin, and into which the fibres of this layer are built, so attaching the denticle or dermal scale to the deep layer of the coreum. This tissue very exactly resembles cementum. It is formed on the dentine as the cementum of a human tooth is, and shows the connective-tissue fibres embedded in it. In the ganoids the basal plates of adjoining scales unite, forming the armor plates of such fish as the sturgeon and gar-pike, and the dentical remains projecting from the surface of the plates.

In the simplest teeth, as of the shark lamna, which are typical dermal scales, we have an exactly similar method of attachment, which may be taken as the simplest and most rudimentary, or attachment in a fibrous membrane. That is, there is no develop-

ment or modification of the arch of the jaw, and the teeth have no direct attachment to the bone; in fact, the jaws themselves are chiefly cartilage.

The formation of the hinge attachment as illustrated in many of the fishes may be understood as a modification of the attachment in a fibrous membrane in a more highly specialized creature. These hinged teeth are found in many fishes and in the poison-fangs of snakes. The jaws are calcified, and the basal plate or cementum may be considered as confined to, or specially developed on, one side of the dentine papilla, which is also more highly developed, especially in snakes. This cementum is built and calcified around the fibres of the fibrous tissue which pass directly to the bone of the jaw at that point. This bone is to be regarded as an addition to the jaw specially developed for each tooth. We have then not only a modification in the arrangement of the cementum, but a development of bone for attachment of the tooth. The blood-vessels pass through the fibres of the hinge to the pulp, and are not affected by the motion of the tooth on the hinge; in fact, the pulp seems to be attached to the hinge. There are many complications of this method of attachment, but this may be taken as the type and the manner of its modification from the rudimentary conditions. The distinction, in this form of attachment, from the dermal scale consists in a modification of the arrangement of the cementum of the basal plate and a development of bone from the jaw to attach fibres which pass from cementum to bone directly. It should also be said that there are developments in the hinge teeth related to the third form of attachment,—namely, ankylosis, which cannot be understood until this form is studied.

The third form of attachment, ankylosis, or direct calcified union with the bone of the jaw, cannot be understood without a careful study of the nature and formation of the dentine in these rudimentary teeth. It is evident, from a study of the dentine of the dermal scales, that, compared with human dentine, the tissue is rudimentary and not differentiated from other similar connective tissues. The tubules are comparatively very irregular, and resemble very strikingly the tubules found in the secondary dentine formed by a degenerating pulp. The odontoblasts, or dentine-forming cells, are not like the highly specialized cells which form the primary human dentine, but resemble very closely simple spindle-shaped connective-tissue cells; the nucleus is larger and oval in form,

and the protoplasm stretches off from it in one direction into a fibril instead of in two directions into a spindle. The cells are much smaller than human odontoblasts and nearer the size of ordinary spindle-cells of the human pulp. In fact, they look more like specially developed spindle-cells than odontoblasts. The formation of dentine begins on the surface, at the apex of a cone-shaped papilla of connective tissue, and proceeds inward. If the formation continues uniformly over the surface of the papilla, a solid layer of fine tubuled dentine results, but it often proceeds irregularly, apparently having special reference to the neighborhood of blood-vessels, so that irregular projections of dentine are found on its inner surface, dividing the pulp more or less into portions inclosed in larger channels or tubes. These may be very regular in arrangement and form around blood-vessel loops embedding the blood-vessel in the calcified tissue, forming what has been called vaso- or vascular dentine; but the formation is still from the surface of the pulp until it is obliterated, except for what remains in the larger canals. As distinguished from this formation of dentine we find in the body of the dental papilla of many fishes the formation of spicules of calcified tissue, shooting down through the substance of the pulp which resemble neither dentine nor typical bone. They are more to be compared with the first formation of bone in membranes, or in the embryonal connective tissue of the body of the human jaw which is afterwards removed by absorption and replaced by true Haversian system bone. These calcifications contain lacunæ, and have tubules or canaliculi running through them, and so, as Tomes says, are intermediate between dentine and bone. They divide the pulp into irregular spaces, and interdigitate, or perhaps actually join, the formation of dentine which has been progressing from the surface of the pulp. These spicules run down into the bone of the jaw, forming an actual calcified attachment for the tooth with the jaw, but in this view of it it is to be regarded as a calcification, or rather a formation, of bone in the pulp-papilla interlocking with the dentine. In some of the fishes, as in *Scarus*, there is at the same time the remains of the cementum of the basal plate formed on the outside of the dentine around the base of the cone, which includes fibres which pass to the surface of the bone. Ankylosis is confined to the teeth of many fishes, and may be stated as a modification from the dermal scale, resulting in the reduction or loss of the basal plate and an ossification of the pulp

continuing through the connective tissue at the base of the pulp to the body of the jaw.

The development of the fourth form of attachment, by implantation in a socket, seems to be an evolution starting from the same point but proceeding in a different direction. It is associated with the very great increase in the size of the teeth and consequent necessity for stronger attachment. This evolution is illustrated in the teeth of the reptiles. Wiedersheim classifies the teeth of reptiles as, 1, resting upon a ledge on the lingual side of the jaw, *pleurodont* dentition; 2, resting on the upper border of the jaw, with a slight ridge around them, *acrodont* dentition; 3, lodged in permanent alveoli, as in the crocodiles, *thecodont* dentition. These three classes illustrate three stages in the development of the socket method of attachment. In the simplest form there is a cone-shaped tooth attached to the bone around its base by fibres being built into the cementum and the bone. There is little modification of the rudimentary form and little development of bone for its attachment. In the higher form the tooth has become long or peg-shaped, and the bone has grown up around a portion of it to support it, but it is attached to the bone by connective-tissue fibres being built into the cementum on the surface of the peg and into the bone of attachment on the jaw. The development of the form of the tooth to the peg from the cone may be understood as a continuing of the development of odontoblasts and the formation of dentine (which always begins at the apex of the cone) farther and farther down on the sides of the dental papilla; then the formation of cementum which begins around the base of the cone and continues down on the outside of the calcified dentine, covering its outer surface and building the connective-tissue fibres into the tooth. The development of the bone accompanies, or rather follows, that of the tooth, building the other ends of these fibres into the bone which is developed to support the tooth.

While this probably represents, in a rough way, the manner of evolution and differentiation of the teeth and their attachment, as shown by the works already published in this field, there is still some work to be done in the study of the development and specialization of the dental tissues, and especially in the study of the relation between the bone of attachment and the cementum. I had hoped to have some things to present in this study, but the failure of material makes it impossible at this time.

STOMATITIS FROM A DENTAL STAND-POINT.¹

BY DR. D. GENESE, BALTIMORE, MD.

THE practice of dentistry of to-day calls for more than the knowledge of filling teeth and making dentures. The subject stomatitis, and its kindred complications, is as much of interest to the dental as to the medical practitioner.

The dental operations termed oral surgery cannot be undertaken if our patients are not in a proper physical condition to bear the manipulations needed. It is our duty to obtain the history of our patient pertaining to the conditions presented to us just the same as our medical *confrère* would when consulted by his patient. While dental lesions have their reflex action upon the nervous system, stomatitis has the same, and will often render a patient totally unfit to remain long in the dental chair.

Stomatitis, so intimately associated with organs of mastication and the oral cavity in general, should claim our earnest attention, and every dental practitioner should not fail to put into practice his medical training received at college and in daily practice, and give his patients the benefit of his experience instead of abandoning this part of his education for the exclusive work of filling teeth and making artificial ones.

Our energies to get at work often leads to a long period of nervous prostration of our patient, who may be suffering from stomatitis or gastritis, and the dental practitioner gets blamed for being the cause, whereas he would have avoided the delay and annoyance by a careful inquiry and a diagnosis of his patient's condition previous to commencing the dental operation.

When we are called upon to treat a case of facial neuralgia of long standing, our inquiries should be very searching, and we are sure to find some derangement of the stomach and digestive organs involved, as the following case will illustrate.

Mr. H., about fifty-five years old, had had some lower molars extracted some weeks previously to my seeing him; pain had not only continued, but increased in intensity, and large quantities of morphine had been administered without allaying the pain. His

¹ Read before the Academy of Stomatology, Philadelphia, February 25, 1902.

medical adviser sent for me to meet in consultation. His condition was serious,—moaning with pain; high fever; pulse 95; lips and tongue nearly black; fetid odor; and it looked like a case of typhoid. But the patient was conscious and able to answer questions, which helped the diagnosis. There had been great hemorrhage, and no doubt blood had been swallowed. The administrations of the morphine in large quantities had locked up all secretions, and constipation had existed for a week. Here evidently was a case of severe form of reflex action from the pneumogastric nerve. Calomel had been administered without effect, also bluet drops. I advised the use of glycerin in suppository form, one every fifteen minutes until relieved. It took eight sixty-five-minim suppositories to get the desired effect, and, to use the patient's words, he said he could hardly bear to be near himself when the evacuation took place. The treatment was followed by saline draught and by subnitrate of bismuth, with the result that in three days all pain ceased.

The dental practitioner meets with difficulties in that the patient does not consult him in regard to the general state of health, and he is compelled to put leading questions from external observations only. His opportunity is sometimes greater for a diagnosis than that of the medical man, as the patient is longer under his observation at close quarters, and he should insist that his patient go under treatment from the medical adviser before commencing any serious dental work.

The following may be considered among the causes of stomatitis: An overloaded stomach with indigestible food; too much cold-water at meal-time; exudations from chronic ulcers or abscesses mixing with food swallowed; excessive smoking; imperfect mastication; inflammation and ulceration of the tonsils or larynx; excess of uric acid; and last, though not least, pin-worms in both children and adults, often caused by an excessive meat diet.

The symptoms of the last-named cause of stomatitis are very marked,—twitching of the eyelids with a dulness of the pupils, muscular contortions of the face, sleepless nights, uncertain appetite, and grinding of the teeth. Recognizing these conditions in a child brought by her mother, accompanied by two sisters, I called attention to it, and the mother said her doctor pronounced it nervousness from study. Examination showed her teeth in perfect order, so I advised an examination of the excrement, when pin-

worms were found. I prescribed one grain of santonin every morning for a week, fasting, and on alternate nights five grains of extract of cascara. In three weeks the child lost all trace of trouble, and has continued in robust health.

Another case. A lady of about twenty-two years of age, whom I had attended for some years, came for relief of neuralgia. She said she was under treatment for stomach trouble. She was very weak, and nearly fainted in the chair. A searching look convinced me she was lacing very tightly. I told her of it, and prescribed a sedative of compound kino powder, ten grains twice a day, and some Rochelle salt. All pain and distress disappeared by the end of the week, and I do not think she will lace tightly again.

Nausea in impression-taking is very distressing, and the patient subject to this condition may often be benefited by timely treatment. A case of this kind baffled every dentist the lady visited, and she had to dispense with teeth on this account. She had been treated for stomatitis by many practitioners and at various hospitals without result. During gestation this condition was somewhat improved, but after the birth it increased to a violent extent, and ended in death, but the coffee-ground exudation just previous proved it to be a case of cancer of the pylorus.

Allow me to conclude by saying that I would never open a root for a patient suffering from constipation without first removing the ailment, as it may be termed, and administering in one-grain doses, three times a day for three or four days, sulphite of calcium to eliminate the stomatitis consequent on this condition, and which may lead to veritable poison.

THE MODERN DENTIST FROM A MEDICAL STAND-POINT.¹

BY DR. WILLIAM KNIGHT, CINCINNATI, OHIO.

ONE result of the Baconian method of research has been to enlighten both the scientific and the professional mind. Previous to the time of Bacon, scholastic arrogance prevailed, and the votaries

¹ Read before the Section on Stomatology of the American Medical Association, at Saratoga Springs, June, 1902.

of the then dawning sciences kept themselves aloof from a large portion of their fellow-beings, whom they regarded with the greatest contempt or indifference. Scholasticism, long decaying, received its death-blow from Bacon. It, however, struggled desperately against its destruction, and so persistent has been the contest, that at the present day there remains a remnant of that haughty arrogance. But that is slowly disappearing before the radiance that is glowing from the secrets of ethical and physical laws that are now being revealed to man. This advance in knowledge has gradually developed a fraternal feeling among the various investigators in not only the closer but also the more distantly allied branches of science. This accession in science has necessarily enlarged the views of man, and consequently has made inroads into that seclusiveness that had grown and encircled most of the professions, and particularly the medical profession.

It would be interesting, indeed, to trace historically the gradual crumbling of those seclusive walls, built as they were of arrogance and prejudice. But that is not our present purpose. We desire simply to emphasize the fact that it is due to this general advancement in science that we have to-day a medical profession that is liberal and democratic, and that is extending the hand of fellowship to every one engaged in the healing art, irrespective of the specialism that he may have chosen. As thus, when, in 1882, a few of the prominent practitioners of dentistry desired that a section representing their branch of surgery be created by the American Medical Association, their request was granted, and a section on stomatology was added to the existing sections of that representative body. This professional recognition of dental surgeons entitled them to the privileges, advantages, and courtesies due to any other member of the American Medical Association. This affiliation should be an incentive to members of local and State dental societies to occasionally discuss subjects that have a general bearing upon medical questions. This is the method followed by other specialisms, as, for instance, those of ophthalmology and dermatology.

I believe that a dental student, when matriculating at a dental college, should be impressed that he is about to enroll himself as an aspirant to membership in what is termed a learned profession. He would thus, at the beginning of his studies, realize that his curriculum must necessarily be a comprehensive one, embracing all of the studies pertaining to the profession of which he hopes to become a

member. I believe few of those who have given anatomical lectures to dental students will dissent from the statement that, with few exceptions, it is difficult to impress the dental student with the importance of acquiring a practical knowledge of anatomy. This would not be the case if they would view the matter as they should, —from a medical stand-point. Last year, when in London, I was informed by one of the examiners for English qualifications for American dental graduates that most of the candidates were quite defective in anatomical and physiological attainments. The reason for this lies in the fact that heretofore the dental student has not realized how necessary it is for him to acquire a practical knowledge of these two studies. The progressive dental surgeon of to-day is conscious that his knowledge of anatomy and pathological anatomy is essential to him, for he sees, almost daily, diseased conditions in the mouth and its surroundings, the character of which can only be understood by applying the teachings of these two sciences. The dentist not infrequently observes morbid conditions in the mouth that are produced by some constitutional disturbance. He thus finds himself confronting questions pertaining to general medicine. For instance, he may find healthy teeth loosened in their sockets, perhaps an entire row of them. No other morbid conditions are apparent; there are no symptoms, nor have there been, of Rigg's disease; there is no absorption of the alveolar processes, no shrinking of the gum tissues. An examination is made of the urine, and sugar is detected; the diagnosis of diabetes is made, and the indications for treatment become clear. In this connection the following cases present features of interest:

An English army officer suffered from a severe and continuous pain in his left eye. The oculist whom he consulted, after exhausting all means of relief known to him, and affording none, decided upon enucleation. The operation was performed, but, unfortunately, the right, the unaffected eye, was removed by mistake. There was no relief obtained for the left eye by the operation. It was now decided that the mouth should be carefully examined, which would have been done before the right eye was removed if a dental surgeon had been consulted. The examination of the mouth resulted in the discovery of a carious tooth, and, although the tooth gave but slight discomfort, it was extracted. The result was most fortunate. The pain in the eye abated at once, and in the course of a few days disappeared entirely.

A few years ago I treated a young man for clonic spasms of the upper right eyelid. After some ten days' treatment, the condition remaining the same, I advised him to consult his dentist. He smiled at this, but did as I advised him. He returned a few days afterwards entirely relieved of the annoying affection. His dentist had discovered a small painless cavity in an upper molar tooth, which he treated. The clonic spasms of the eyelid in this case were evidently associated with the carious tooth, and afford a good illustration of some reflex act excited through the sensitive filaments of the second division of the fifth cranial nerve, affecting thereby some filaments of the seventh cranial, *a motor nerve*.

These cases are illustrated, and indicate that consultation should be more frequent between the dental surgeon and the general practitioner, especially with the ophthalmic surgeon. A large number of cases could be cited to prove the dependency of one part of the human body upon another part, and if the teeth were selected for this purpose, a most interesting group exemplifying this could be collected.

The teeth, although anatomically regarded as dermal appendages, have a very close functional relationship with several of the cranial, and more remotely with some of the cervical spinal nerves. How frequently are inflammatory conditions seen in the face, neck, and even the external chest, that owe their origin to disturbed nutrition, brought about by irritation starting in a diseased tooth. In this connection a case recorded by John Hilton in his classical work, "Rest and Pain," is worthy of full quotation.

"A professional friend had an enlarged gland below the external ear, the real cause of which was not quite apparent, and so he requested me to look at it. There was a slight discharge of morbid secretion in the auditory canal. We argued together, and I said, 'Very likely it may be the result of a decayed tooth; irritation from it may be conveyed to the auditory canal and induce morbid secretion. That morbid secretion may produce slight excoriation, and that excoriation, aided by lymphatic absorption, may explain the existence of the enlarged gland.' The tooth was extracted, all the other local morbid conditions disappeared, and there was no recurrence of the local symptoms."

This case proves that irritation of a nerve, the fifth cranial in this instance, is sufficient to lead to more or less change in function

and structure, and that morbid influence may, after a time, induce a deterioration resulting in ulceration, etc. How important, also, it is that the dental surgeon should be able to diagnose in an early stage the various neoplasms so frequently seen growing in the mouth, lips, jaws, and tongue! Especially is this of great moment in instances of malignancy arising in the regions mentioned. It not infrequently happens that a patient having an incipient malignant growth, of which he is not conscious, has pain in a tooth, the pain in the tooth being caused by the presence of the small malignant tumor. The failure of the dentist, whom the sufferer consults, to recognize the existing condition may result in the destruction of the patient. Two instances of this kind have come under my observation during the past few years. In both cases the malignant growth was sarcomatous. One originated in the antrum, the other made its first appearance in the molar region of the inferior maxillary bone. In each case the tooth had been extracted for the relief of pain. Some months afterwards, when the patients came under my observation, infiltration of the neighboring soft parts had occurred to such an extent that a successful result could not be expected to follow even a most radical operation. On the urgent solicitation, however, of the patient suffering with a sarcoma of the upper jaw, I agreed to operate, with the understanding that in all probability the affection would return. At the time of the operation I removed half of the upper jaw, together with a large quantity of sarcomatous tissue from the surrounding parts. Growth returned after several months, the patient dying a few months afterwards from exhaustion. I refused to operate in the other case, as the floor of the mouth, the gum, and the cheek were extensively involved. I, however, used injections of Colly's serum (*the streptococcus erysipelatus prodigiosus*), so highly recommended in inoperable cases of sarcoma, with the result, however, of adding to the sufferings of the patient, who succumbed to his affection six months after I first saw him.

Much more frequent than neoplasms and inflammatory affections that have their origin from dental irritation are those instances that are purely reflex in their character, and that are excited through irritation of the dental branches of the fifth cranial nerve. Most of these cases can only be diagnosed by applying the general principles of medicine to their elucidation; the constitutional peculiarities or taints of the individual must be considered. A rheu-

matic, gouty, or specific habit must be recognized before rational treatment in any given case can be decided upon.

For the reasons given in these brief remarks, it must be apparent that the dental surgeon of to-day must have a knowledge of the principles of medicine, and by virtue of his professional attainments he becomes a member of that great brotherhood, the medical profession, whose mission it is to relieve human sufferings.

Reviews of Dental Literature.

ANÆSTHESIA OF THE TEETH BY MEANS OF HIGH-FREQUENCY CURRENTS (D'ARSONVAL). By Dr. Rudolf Bum, Vienna.¹

The author first refers to the experiments of Professor d'Arsonval in regard to the physiological action of the Tesla high-frequency currents. Such currents have proved to be, in spite of their high tension, entirely harmless. They have for some time been used in electro-therapeutics in the treatment of neuralgias and affections of the skin. It was later demonstrated that such currents when applied to the skin for a sufficient length of time produced complete anæsthesia. In 1893 Drs. Cruet and Oudin, in Paris, used high-frequency currents to produce anæsthesia in tooth-extraction. A moist wad of cotton was placed about the roots of the tooth to be extracted, and this was made one electrode. The other electrode was applied to the outside of the cheek. In about fifty per cent. of the cases reported the results were entirely satisfactory. In spite of these favorable results little was heard of the method until recently, when the work of Drs. L. R. Regnier and H. Didsbury (Paris) became known. These investigators used the current not only for tooth-extraction, but for the control of sensitive dentine. They lay down the following rules of procedure:

1. The mucous membrane before the operation must be washed with alcohol and permanganate of potassium.
 2. The operation-table must be free from all metallic substances.
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¹Ueber Anästhesie der Zähne mit Hilfe von Hochfrequenzströmen (d'Arsonval), von Dr. Rudolf Bum, Zahnarzt in Wien. Österreichisch-ungarische Vierteljahrsschrift für Zahnheilkunde, April, 1902.

• 3. A current of one hundred and fifty to three hundred milliam-pères must be at command.

4. The proper setting up of the apparatus is of the greatest importance.

The results in the hands of these experimenters were surprisingly good. Single-rooted teeth after an application of a current of one hundred and fifty to three milliam-pères for from three to five minutes could be extracted without pain. In the case of teeth with more than one root, a loss of sensation was reached by the use of a current of two hundred and fifty to five hundred milliam-pères for from five to eight minutes. The author has undertaken to verify the observations of the above quoted men; and with the aid of Dr. Leopold Freund, of Vienna, and his apparatus has conducted a series of experiments. He finds that the application of a high-frequency current to the skin produces first an anæmia in the form of chalk-white blisters and an erection of the papillæ (goose-flesh). This condition gives place after a few minutes to a hyper-æmia with strong erythematous coloring.

Subjectively a certain degree of loss of sensibility appears immediately after the application of the current. This loss of sensation can go on to complete insensibility. The anæsthesia according to the author, is due to a loss of nourishment, and the destruction of function of the sensory nerves due to the anæmia. In his practical cases the author says, "In some cases we had an entirely satisfactory result, the extraction was entirely painless. Other cases gave a negative or, at least, a questionable result. The small amount of bleeding after the extraction was always noticeable. We are to-day only in the position to say that the high-frequency currents possess a decided anæsthetizing effect; but whether this anæsthesia will reach the point desirable for the painless extraction of teeth cannot now be safely said." The author promises another communication at the close of further investigations.

WILLIAM H. POTTER.

Reports of Society Meetings.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, on Wednesday evening, March 5, 1902, at six o'clock, President Bradley in the chair.

INCIDENTS OF PRACTICE.

President Bradley.—Under the head of "Incidents of Office Practice," I believe Dr. Cecil P. Wilson has something of interest which he will present to the Academy.

Dr. Wilson.—I have a mallet, the model of which I got up some little time ago. It works on a different principle from the ordinary automatic mallet. This mallet has an outer case just like any other mallet. The inner plunger or shaft connects with this right-angle piece, and that, in turn, connects with what is called a ratchet gear, and that operates a small pinion-wheel gear, which forces the mallet down. The length of the full stroke is about one-tenth of an inch; that brings the hammer down ten-tenths of an inch, or ten to one. Inside of the mallet is a spring, very similar to any other mallet, simply for the purpose of returning, or bringing back, the hammer-head to its previous position after the blow has been struck. There is also a small spring connected with the hammer-arm, for the same purpose. The hammer-head is a piece of brass, with a hole bored directly through the centre. The lower end of this hole is stopped with a piece of thin white metal, and over this piece of white metal lead is pounded down. The plunger coming in contact with the white metal, with a backing of lead, gives an effective blow, and at the same time one that is not disagreeable.

Dr. Andrews.—I had the pleasure of seeing this mallet work in Dr. Wilson's office, not very long ago, and I was very much pleased with the way it packed gold. Any one who will try it will find it works differently from the ordinary hand-mallet. I was so much pleased with it that I ordered one.

Dr. Smith.—Dr. Wilson kindly presented me with one of his

mallets, and I am very much pleased with it. The action is somewhat different from the ordinary automatic mallet, and it comes the nearest to the old-fashioned hand-mallet of any automatic mallet I have ever seen.

Dr. Wilson.—In regard to the hammer-head, it is a piece of brass with a hole bored directly through the centre, and the plunger comes in contact with a piece of platinum. This platinum is soldered directly in the bottom of the hammer, and then the hammer is turned over and lead is pounded down into it. If it were poured in, it would be too soft, but it is hammered down hard. I think the platinum is just a grain soft. This only comes in contact with a piece of white metal instead of platinum. I forgot to explain that.

President Bradley.—Dr. Brackett has an appliance that he would like to present.

Dr. Brackett.—There came to me at the beginning of the summer season last year in Newport a gentleman from another city, in a very unsatisfactory condition, on account of difficulties with an upper plate. He had had several plates made by a number of different dentists, and none of them with any success whatever, so far as suction or stability was concerned. The patient was a gentleman of refinement and of social instincts, and his condition very much impressed people who had not seen him since the loss of the last of his natural upper teeth. With his upper plate in his mouth he could speak little except by closing his lower teeth against the others and talking through his teeth, which was a very serious embarrassment for him.

I do not remember another instance where trouble of this sort with artificial teeth was so grievous as in the case of this man. The other members of the club which he frequented, quite a number of them, at different times came to me with an appeal: "Is it not possible to do something for Mr. So-and-so's teeth?" and he was denying himself those social pleasures to which he was accustomed. It was a matter of remark in the community, "Why is it that Mr. So-and-so accepts no dinner invitations this year?" His condition in this particular appealed very much to my sympathies. I have a great esteem for this gentleman, and I was very much impressed with the seriousness of the predicament in which he was. I said that I did not know that I could do anything for him, but I would try. I did try, from early in the summer until the day

before his return to his city home in the autumn, when he came away from Newport with the appliance which I show you to-night.

The peculiar difficulty was with his upper arch, which was very small and extremely soft and pliable. I pass about two models, one of which shows the cast just as it came from the impression, and another one which happened to be by its side in the laboratory, and upon which I did considerable carving about the borders, hoping that turning in the border of the plate would help. If I compare the mouth to anything I ever saw, it would be perhaps to a uvula in texture and mobility. I made a number of patterns, including some of the Ideal base-plate, which is inflexible, and, trying them, I was able to make nothing whatever in the way of a pattern of any material that would stay in place for an instant. I settled upon the conviction that the plate, which had been made for him by a capable practitioner in Boston, was probably the best that could be done. Then I began to think what manner of scheme could be contrived by which that upper plate could be held up. He wore on the left side of his lower jaw a partial set of a few teeth, not filling all of the spaces, and he had a number of natural teeth remaining standing at various angles, the left lower second bicuspid in particular being very much tipped inward. I conceived the idea of using spiral springs, after the old-fashioned English plan, to hold up the upper plate; and, taking the upper plate with which the patient was already provided, I began making efforts at the construction of a lower plate which I could put in the mouth after it was made. I tried a good many times before succeeding. The way the lower plate was ultimately constructed was by making one section at a time, filling one space with a new construction of plate, putting that in place, taking an impression of another section and completing that, and then the third section likewise, in this way making one continuous partial lower plate with three vulcanizations.

All of this was so experimental that I did not feel justified in taking away anything whatever from the lower jaw which was serviceable as a support for the appliance which he was already wearing. If I failed, I wished to leave him no worse off than I found him. This lower plate, being constructed in sections in that way, had attached to it, after the manner which you will see, a spiral spring on each side turning on a swivel, with clips upon the lower molars, so that the force of that spring should not drive the lower

plate too much down into the soft tissues. It was immediately successful, and has been worn from October to the present time with comfort and satisfaction. The lower plate I made was so thin on the lower jaw, in order to spring it into place, that it broke, but it was readily repaired, as you see. The patient puts in this fixture in the morning and wears it down town to his office and attends to his business. As he is quietly in his home in the afternoon, he sometimes finds the presence of the springs a little uncomfortable; when that is experienced he takes out the plate and gives the mouth a rest. The springs suffice to hold up the plate. The appliance enables the gentleman to attend an evening dinner if he chooses, partake of food, and open his mouth to speak without embarrassment or difficulty.

Of the few humble accomplishments within the limits of my practice of dentistry, there are few that have given me greater pleasure than what I have been enabled to do for this gentleman. When I asked him a week ago if he would permit me to bring this appliance here to show to you, he answered, "By all means; if this can be of any service to anybody else, I will gladly have it exhibited;" so it has been taken from his mouth to-night and brought here for you to see. I would say that the credit of this admirably fitted upper plate belongs to Dr. W. B. Parker, of this city.

Dr. Parker has most kindly written me: "I was very glad when Mr. — told me that you had succeeded in making his plate stay up. He was very patient with my experiments last winter, and I was sorry for him. I tried every way I could think of except the springs, which of course I ought to have tried, but remembering the old times when springs were used so much, and the trouble they gave, I thought the chance of success pretty slight. I think the subject of to-morrow evening may be an interesting one, and am sorry that I cannot be there."

I take the liberty of saying further that the patient, at the instance of his physician, gave one of our members an opportunity to see his mouth, and to make one effort at the construction of something on the upper jaw. The patient did this in perhaps a rather perfunctory way, and did not give the dentist, who may perhaps testify something about the condition of the mouth, the opportunity which he desired to persevere with it. I would say further that I have used the springs in other cases where there was

a necessity for some contrivance for holding up the upper plate. One was the case of a gentleman who had lost every vestige of his soft palate and all of his hard palate except a rim around the alveolar process, and had also lost all of his nose, so that his face was perfectly flat. So long as he had some natural teeth remaining on his upper jaw I was able to hold up the plate and an artificial nose in place with a spiral spring, the back end of which was attached to a staple in the upper surface of the plate and the forward end to the back of the septum of his artificial nose. When all the natural teeth were gone, spiral springs, resembling these, became an indispensable and efficient resource, and they have been so worn many years.

The problem in both of these cases was to give a full upper plate stability under circumstances of peculiar difficulty. These springs have provided the solution. In the case of the patient without palate or nose, trial was made of the Stedman springs, but they were quite inefficient. The use of springs is most frequent, I think, for entire dentures where there are no teeth whatever on the lower jaw, and generally with the object, largely, of giving the lower plate stability. Their use in a case resembling this which I show is, I think, unusual.

President Bradley.—Any remarks to be made on this pattern?

Dr. Allen.—A short time before this patient came to Dr. Brackett, I had the pleasure of seeing his case, and of trying to relieve his trouble. I found that the plate he was wearing, the one which you see now, was a very perfect fit, so far as it was possible to adapt a plate to these peculiar conditions, but I was requested to see if I could make a plate which would have some suction. I saw the difficulties of the case, and doubted whether I could improve upon the plate that he was then wearing; nevertheless, I made the attempt. I do not know how my efforts would have succeeded, because when the plate that I constructed came back from the laboratory workman it was so porous as to be useless, and as the patient was soon to leave the city, I was unable to give the case further attention. I do not believe, however, that I should have succeeded. I think the same difficulty would have been encountered with the plate that I had attempted as with the other. It did not occur to me to try the springs at that time, as I have inherited the prejudice against them that is so prevalent in the profession to-day. But I congratulate Dr. Brackett upon his suc-

cess in solving a difficult problem, and feel that I have learned something thereby.

Dr. Fillebrown.—I think perhaps the matter of springs will be considered more by the profession in the future for these cases than in the past. We discard a thing, and then later rediscover it and take it up again.

It was twenty years ago or more that I had occasion to use springs, but not to hold up an upper plate, but to hold down an under plate. I had a patient for whom I made a full set of teeth. Her under jaw was very short, her chin receding, and whenever she opened her mouth she squeezed her under teeth right out. They would not stay in at all. I remedied the defect by putting on a set of springs, and she wore them with great comfort so long as I knew her. In looking at this case as it passed me, it strikes me that the springs are a good deal stiffer than is necessary, and I think the gentleman can have a pair of springs put on that plate that are so gentle in their action that he will wear them the twenty-four hours without excessive weariness. I think it is worth trying to put in a wire about two-thirds as strong as that, which he will be able to wear all day without taking it out. I have in one or two other cases found springs desirable, but we do not often find them needed, and are glad to avoid them as often as possible.

Dr. Stoddard.—I have had several cases where it was difficult to obtain suction; one case in particular, which I reported to the Odontological Society, gave me special pleasure. I used velum rubber to line the plate with. Previously in this case I had made several plates for the patient, and had absolutely accurate impressions, but was unable to make a plate which could be retained in the mouth, and the only way the patient could use it with any comfort at all was by sifting gum tragacanth onto it every day. Finally it occurred to me to use velum rubber, and so I had a plate made and lined with two thicknesses of it. The patient has been wearing the plate with a great deal of comfort ever since, and likes it so well that she had a duplicate set made a short time ago, in case the other should become broken. I would like to ask Dr. Brackett whether he ever tried it.

Dr. Brackett.—I did not try that, but I should very much question if that would hold up this plate. He did have the gum tragacanth experience, if I remember rightly; and I should also question whether a smaller, weaker spring would be sufficient. I

do not understand that this gentleman takes his appliance out because it is any great burden to him; but, as a large share of his business with the outside world is transacted during the morning, in the afternoon he is quietly at home, and feels a little more the physical sense of resting without the appliance than with it.

Dr. Wilson.—I think one thing should be said about the velum, and that is, it deteriorates. It ought to be said, for fear somebody might be led astray. I do not question but what it was entirely successful in your case, but we all remember the velum palates made by Dr. Kingsley, and he finally discarded them.

Dr. Stoddard.—In answer to that question, I have lined several lower cases with velum rubber. I have one case that has been worn two years, and have seen it from time to time. The patient has kept it as clean as possible, and it shows no signs of deterioration as yet, and has no disagreeable odor. Probably in time it will deteriorate.

President Bradley.—There is to be a symposium on inlays, and a paper to be presented by Edward C. Briggs, M.D., D.M.D., entitled "Porcelain Inlays."

(For Dr. Briggs' paper, see page 630.)

DISCUSSION.

President Bradley.—The discussion of this paper is to be opened by Dr. William H. Potter.

Dr. Potter.—I have been asked to touch upon the history of porcelain inlays. The method first in use consisted in getting the size of the cavity by burnishing a piece of tin-foil across its aperture. The foil thus marked was trimmed to represent the size of the cavity, then pasted upon a piece of porcelain, and the porcelain cut down to the size of the tin pattern. The filling thus prepared was supposed to fit the cavity, and was cemented in place.

In the case of round, or nearly round, cavities a more accurate fit was obtained by means of circular inlay burs, which made a symmetrical cavity, into which could be fitted a cylindrical piece of porcelain corresponding in size to the bur. This proved a satisfactory method, where it did not result in a great loss of sound tooth-substance.

Dr. Herbert made glass fillings by taking an impression of a cavity in wax, and from this impression making moulds in plaster or asbestos. Into these moulds molten glass was poured. The

margins of such fillings were imperfect, and the color did not hold; still they were fairly satisfactory. In 1887 Dr. Land devised the metal matrix, using gold or platinum; and from this starting-point has been developed the porcelain inlay as made and used to-day.

My own personal experience with porcelain fillings dates back to a visit with Dr. Jenkins in Dresden about two years ago. At that time I became convinced of the value of this kind of work, and have practised it ever since.

We are often asked, "How durable are porcelain fillings?" My own experience in this matter has been quite satisfactory. Dr. Körbitz, of Berlin, in a recent article, says upon this point, "A porcelain filling holds as long as it preserves the tooth. The peculiarity it has of coming out when it no longer performs its duty increases its importance as a filling-material." And he further says, "If all gold, amalgam, and cement fillings in which secondary decay exist would fall out, they would better serve the teeth than by remaining, hanging by undercuts and concealing the carious spot."

A porcelain filling shows its defects, if they exist, at once. They lie upon the surface, and are apparent. With other fillings they are too often out of sight.

Dr. Briggs.—I had to-day three fillings made, without any special care, just to show the different forms that they may be in. They are not perfect by any means, and I do not show them as such. I have allowed the specimens I have sent here to go as they are, to show the work as it comes from the furnace. Those fillings have not been touched at all. Of course they could be trimmed. The contour in the central incisor shows an edge at the cervical border, but that is because the enamel of the tooth has chipped away from the cervical border. It has dried and cracked off, but they are, as I say, shown to demonstrate what work can be done with the furnace in building up corners or building out contours.

President Bradley.—The discussion is to be continued by Dr. Stoddard.

Dr. Stoddard.—Mr. President, it seems to me that in the case of porcelain inlays there has been rather too much attempted, and that in a great many cases sound tooth-tissue has been sacrificed for the purpose of putting in inlays. I have put them in posterior teeth, but, as a rule, I think the application of inlays is best suited to the six anterior teeth, and that on the labial surfaces. I have

seen some very extensive cases of inlays that have been made by foreign dentists, and I am satisfied that they have sacrificed not only sound tissue, but in some cases have killed the pulps of teeth, so that they might put in porcelain inlays. I think that we had better err in making too few inlays than to attempt too much and make failures of them, and bring the whole subject into disrepute. I have had a few cases where patients have said, when I suggested that they should have inlays, "My friend has had some inlays made, and they proved failures, etc.," and they will not have any in their mouths; and so a few failures may bring a very good thing into disrepute.

A very important thing in making inlays is getting a proper impression. There are a few cases where inlays are advisable, where the cavity is at the cervical margin of the tooth and extends under the gum to a greater or less extent. In these cases I think it is impossible to take a proper impression with a gold matrix, as suggested by Dr. Jenkins. In this case I think one can best get an impression by means of a pellet of gutta-percha packed into the cavity, just as in filling, except the cavity should be still moist, leaving the surface rough, and then forcing it in with a pencil of modelling compound. I have been able to take some very accurate impressions in that way.

Dr. Payne suggested a method of casting these impressions with oxyphosphate of zinc, which I have used for some time, and find very satisfactory. I case the impression with a small bit of oxide of zinc, mixed up to about the consistency of thick cream, or a little thicker, and then set it aside; and after it has hardened I set it in plaster, so that I have a plaster matrix with the cement impression in it. Then I remove the gutta-percha and make a gold matrix. The advantage of this method is that it pushes the gum back, and it is possible to get a more accurate impression than with the gold alone, and then I proceed in just the same manner that Dr. Jenkins does.

I have tried forcing the matrix in with different things, first with cotton spunk, etc., and finally with soft yellow beeswax. I have found the final method the best. I first double the gold with a ball burnisher, and then form it into the shape of the cavity as much as possible, and carry it in, and then pack in the spunk or cotton and fit it as accurately as I can to the cavity, turn over the edges, and burnish them down; then I take some soft beeswax,

not too soft, just softened by the warmth of my hand, and force that in with the flat burnisher. I then take it from the cavity with an instrument, picking it out, and invest it in the asbestos, as in Dr. Jenkins's method. I place a pellet of bibulous paper over it and heat it up gradually in the furnace, the bibulous paper absorbing the wax as it softens.

I want to say a word or two about the question of high- and low-fusing bodies. That term simply means that a low-fusing body is one that will fuse in a gold matrix, without its melting, and a high-fusing body is one that will not. I have tried different kinds. It seems to be the general impression among dentists that the high-fusing bodies are the best. They are, I think, for certain things, but not necessarily for inlays. I think that I can get more accurate impression of the cavity with gold than with platinum, and consequently I prefer to use a gold matrix for that purpose, and in order to use a gold matrix I have to use a low-fusing body. The Jenkins body fuses very readily, and I have found no likelihood of its changing color or changing in any way. Of course, the low-fusing bodies are not as strong, but when I have to rely upon strength for corners, etc., I prefer to use either White's or the Consolidated Company's body, and then I know I have a very hard body which requires a high degree of heat to fuse, and I bake that in a platinum matrix, and am quite sure of the result. These other so-called high-fusing bodies I do not think are sufficiently strong for these cases. There is no danger of making a corner or tip of porcelain too strong, so I prefer to use the strongest body I can find. I think Parker's body is the strongest there is, and it is one of the best for corners. One thing which has disappointed me in porcelain inlays a great many times is that of changing color in the setting. I have time and again had a very good match in color when the inlay was completed, and then in setting spoiled it all by the cement underneath. In the case of thin inlays I think it is unavoidable. The porcelain is more or less translucent: if you put an opaque substance under it, it will show through. Another thing, if the inlay is seen from different points of view, or in different lights, the effect is not so good as you expect, and therefore to that extent porcelain is disappointing, although it is much preferable, of course, to any other material we have, from an æsthetic stand-point.

In regard to the wearing qualities of inlays,—that is, the ques-

tion of preserving the teeth, the tendency of the cement to dissolve, etc.,—I think that is a question not to be considered very much. Porcelain has proved to be a very durable filling-material. Where the line of cement is comparatively narrow, which we all hope to have in making an inlay, the cement shows but very little tendency to dissolve. After it has dissolved to a certain depth, it is self-protecting, to a certain extent. I have seen inlays which have been in a great many years where I could feel around the margin of the cavity with a very fine explorer, and yet which seemed to be preserving the teeth very well, and were likely to do it for many years longer. That point which Dr. Potter brought out seems to me a very good one. If a porcelain filling comes out, you know it at once. It may start to decay a little at the margin, but just the minute the decay goes under the filling, then we know it is time to put in another one.

I do not think of anything else to offer on this subject, except that where one can use to good advantage the round inlays which we spoke of one or two meetings ago, they are very much preferable to the inlays made by the Jenkins method, so-called, or any of these methods where it is necessary to have a matrix.

President Bradley.—The committee informs me that Dr. Allen was to participate in the discussion, but he wished me to present his excuses to the Academy, saying that he felt he must leave in order to reach his home this evening.

Dr. Andrews said he should speak principally of the inlays in the teeth that are in the museum at Cambridge. I think he has spoken to the Fellows of the Academy about them upon some other occasion, and he was going to speak of them at this time, saying that if the people who made those inlays could do so well with the imperfect instruments which they had to work with, of course we should do still better work with the appliances we have now.

This evening we have with us several visitors, and the courtesies of the floor will be extended to all who are present with us. Among them is Dr. Patten, a guest of Dr. Potter. I think he is interested in inlays, and we should be very glad to hear from him.

Dr. Patten.—I feel, after what has been already said, that my limited experience and what little I have to say will not be of very much profit. Most of the remarks have been along the lines of low-fusing bodies, and the experience has been in that line of work. My own has been confined almost entirely to high fusing. This

last winter I have done some slight work with the Jenkins body. I must say that there are a great many things about working with a gold matrix that appealed to me very strongly, especially in cavities in the labial surfaces of teeth more particularly than in any other location.

Dr. Potter brought up a feature of porcelain work that has struck me forcibly, and that is the impression it has made on the public. So far as I have been able to learn, it has been received with a great deal of enthusiasm by patients, and I presume that the doing away with large display of gold is the particular feature that has appealed to them. It has been my experience that wherever I have been able to replace gold fillings with suitable porcelain fillings, well matched and well made, my patients have been especially pleased and gratified, and have felt the need of more of it. Another feature that has recommended it very strongly to me is the use that I can make of it in teeth that you might term frail, where the application of gold by the old-time methods would be out of the question. In fact, they would be barred out because the teeth would not be of sufficient strength to stand the application of a large gold filling. In that case porcelain is pre-eminently the finest thing to use, because of the fact that pressure is not required, and we get the sustaining strength of the cement and also the support of a large body of porcelain. In these cases I think all those who have followed this line of work will bear me out in saying that it is the filling to use.

There are, of course, in everybody's experience many dismal failures to be recorded and to stare us in the face, but the element of permanency or the lack of permanency is one that we can almost abstain from discussing. If any of you happen to have read the article in the *Items of Interest* for January, by Dr. Capon, of Philadelphia, relating his twelve years' experience, it seems to me his experience would be satisfactory to almost anybody in the line of permanency; and most of you gentlemen, I presume, who have seen his work, must admit that the results he obtained are entirely satisfactory. His only "failure," I think he calls it, was a tip on a central, and he said that it had been in place nine years before it required attention. I happened to be in his office just about a year ago, when he was replacing that tip on the central, and he told me that was put on nine years before, and he expected the one he put on that day would stand fully as long. That is about as

much as we can expect of any kind of a filling, and without considering the decided advantages of the appearance.

I have been strongly tempted many times to throw aside the platinum matrix, because of inability on my part (I think it is merely a matter of lack of skill, perhaps, in manipulation, which may come after more experience), and adopt the gold matrix, but several things have deterred me from doing this; and in my experience I would hardly recommend anybody who has adopted a certain method to throw it aside for another. If a man has adopted the low-fusing bodies with gold matrices, his best plan is to follow it out, as both the high- and low-fusing bodies have their special recommendations; but I am satisfied, so far as I have gone, that what failures I have had, and they have been many, have been the result not of the method I am using, but of my lack of manipulation or skill, which I hope in time to overcome.

In regard to shades, the outfit of Dr. Jenkins presents some very natural and desirable shades, but I have found in the last few months that my early methods of matching the porcelain of the teeth have been very defective, because of the fact that I have endeavored to match the teeth by securing shades of porcelain as a result of mixing one or more in the start, which I have found to be a great mistake. At the present time I adopt a little different method, and, if I might so express it, there is a very great desirability in being able to see the underlying shade.

There is one special feature I would like to mention in the preparation of the cavity, and that is, the result largely depends upon the margins. They should be sharp, clearly defined, and very accurate, and, of course, Dr. Jenkins's method of subjecting them to considerable polish is a very admirable one; but I fail to see wherein he can apply that high polish to the entire margin of the cavity in all cases. In many cases you can, and in a great many cases you cannot; but it is desirable to have the margins absolutely true and perfect. They do not need to be parallel, but should be square and sharp, in order that the matrix may be clearly defined, and therein lies the secret of bringing out the porcelain in perfect shape.

I was interested in the remarks made by those who preceded me, in regard to the setting of porcelain by cement. My early experience prompted me to do as I had been advised by others, protect the porcelain and the cement with the rubber dam, but my

later experience has been quite widely different; and if the porcelain comes out with the margin a little too sharp and perhaps a little too high, I do my trimming before setting the porcelain, and after the porcelain is set with cement I simply wipe the cement off and let it go. As Dr. Potter put it, cement will set harder in saliva than if kept dry; therefore I simply do away with that trouble.

Dr. Potter has called my attention to that question about the shades. I start now with a shade which I seem to see underlying the enamel, and follow that up with another which will approximate, and finally finish the whole with a shade which is as nearly a perfect match to the enamel as it is possible to get it. In ninety-nine cases out of a hundred the shade that I start with will be the lightest, because I think in the majority of cases the dentine is apt to be lighter than the enamel, and the enamel will perhaps be of a blue, green, or yellow shade. In that way I get a piece of porcelain that will more closely resemble the tooth than in any other way.

Dr. Belyea.—I would like to inquire if Dr. Stoddard has made any other experiments with the Canada balsam?

Dr. Stoddard.—No, I have not. I have not dared trust it in the mouth, but I set one three or four months ago, and I still look at it from time to time, and cannot see that any change has taken place, so I think theoretically it is all right; practically I should hardly dare trust it in the mouth.

Dr. Meriam.—I have heard of specimens of Japanese lacquer that have been in sea-water for years and came out uninjured. I think that some of our manufacturers have, whether they do now or not, offered a lacquer that resisted hot alcohol, and very likely along some of these lines we would find a cement that would suit us. I never hear this question discussed but that I am surprised at our lack of patriotism in not putting on record that the matrix was first made here in Boston earlier than 1875. It seems extraordinary to me that it should be so.

Dr. Decker.—Among many other valuable points I have gathered from Dr. Clapp, one applicable to this discussion is the manner of mixing the cement to preserve its original color. It is done with a wooden spatula. The metal spatulas unfortunately discolor it by wearing off. I simply take an orange-wood stick, about one-quarter of an inch in diameter, and whittle one end, then file it

perfectly smooth to about one-sixteenth of an inch in thickness. This can be dipped in a liquid with immunity, and is strong enough to apply the force. After it has been used a short time, it becomes coated with cement and ceases to absorb the liquid. After mixing I scrape off the wood with a steel spatula. When it becomes too thick it is filed down again, and makes an admirable instrument. It obviates the discoloration of the cement, because there is no oxidization of the wood.

In regard to leaving a layer of cement over the inlay to preserve it from moisture, it seems to me impracticable, as cement left on the smooth slab and moistened, within a few minutes after it has been mixed will by capillary attraction become loosened and wet between the cement and the slab, and it seems to me that the same capillary attraction of the saliva would run immediately under the cement on the smooth surface of the tooth and the inlay, and moisten the cement inside almost as quickly.

Dr. Briggs.—I would like, for the encouragement of those who do not know how well these stand, to speak of one case that comes to my mind of a corner that I put on a front tooth, about the size of the corner of that tooth that was passed around.

A young man bit off a corner, and I put one on a little over twenty years ago, and he wore it eight or nine years, and then had an accident and broke the porcelain right in two. He might have broken his tooth. I put on another one, and that one he is wearing to-day, and his tooth is in perfect condition. That is one only of a great many cases.

My experience is not confined only to the Jenkins porcelain. I have put them in for over twenty years, but of course the old method was very laborious, and I did not seek to do anything except in very conspicuous places; but with the Jenkins method I put it in all parts of the mouth, and not for the purpose, as was intimated by Dr. Stoddard, of getting the porcelain in at any cost, but put it in teeth where it would not admit of anything else, unless you put in cement, or destroyed the pulp in order to build up a gold filling; and it is in that character of teeth that I have found it very helpful, in just the cases where our best gold operators would decline to attempt to put in a gold filling under the conditions that existed.

Dr. Cook.—I would like to speak of the impression that I gathered from Dr. Potter, which was that Dr. Pond in his experi-

ments found that cement when wet was just as strong as when dry. I got the other impression,—i.e., that if the cement is covered over with wax or resin or paraffin, it does not last much better than if allowed to be wet at once, but if kept dry for a long time, that was the cement that stood the high pressure.

Dr. Belyea.—That was what I also gathered from Dr. Pond's remarks.

Dr. Ainsworth.—I should like to know if there is any choice in furnaces for low- or high-fusing bodies?

Dr. Briggs.—The Jenkins, of course, is good, but I have used lately the Ash or the Hammond. The Ash is a very simple furnace, and is an electric furnace. It is made about the size for an inlay. The Hammond furnace is more elaborate, and that may be used for all bodies. I have often used the Parker body in that, although it has burned out one or two muffles.

Dr. Stoddard.—I still stick to the gas-furnace,—for very high-fusing bodies, the Parker furnace, but for the Jenkins inlay and the low-fusing bodies I use the Ash furnace.

On motion, adjourned.

CHARLES H. TAFT, D.M.D.,
Editor American Academy of Dental Science.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, January 28, 1902, the President, Dr. S. B. Luckie, in the chair.

The evening was occupied by the discussion of "Incidents of Office Practice."

DISCUSSION.

Dr. E. T. Darby.—I would like to get the experience of the members here in present methods of obtunding hypersensitivity of the dentine, and of extirpation of the pulp without the use of arsenous acid.

It may be remembered that about a year ago I spoke of a method of injecting carbolic acid and chloroform (equal parts)

into the pulp and extirpating it immediately. I have modified my procedure, and have substituted cocaine crystals, moistened with a drop of water or five per cent. formalin. This is pressed against the pulp with vulcanizable rubber and immediately thereafter the pulp is extirpated, usually within two minutes after pressure is begun, and in almost every instance without pain. What little hemorrhage there has been I have been able to control with chloride of zinc. I have been able to fill the pulp-canal immediately, go on with the operation, and have had no subsequent pericementitis. I can do this in ninety per cent. of exposures in the teeth anterior to the molars. I have learned that in all root-canals the best after-results have been obtained where the canals have been largely reamed to remove the ends of the fibrillæ, thus furnishing a clean open root and lessening the amount of putrescent material. I use a five- or a three-sided reamer, like a Talbot's reamer. My results justify me in continuing that treatment in probably sixty-five per cent. of the exposures that present, and in using just as little arsenic in the devitalization and extirpation of pulps as possible.

Dr. H. Roberts.—I would like to endorse Dr. Darby's use of cocaine and pressure. It has been a question with me whether, after the pressure has been exerted and the pulp thoroughly anæsthetized so that it may be removed, its sensibility can or will return. In only one case in my practice have I been able to determine this. I used the method in the buccal cavity of a lower third molar. Containing a large gutta-percha filling on its mesi-occlusal surface. After anæsthetization I took out all the bulb of the pulp and then removed this gutta-percha filling. I expected to have no trouble, for I never had had any, but I could not enter the roots at all; neither could I reproduce the anæsthetic effect of the cocaine and pressure. I had then to resort to arsenic. My failures have been almost invariably in the third molars, where there have been acute symptoms of pulpitis or hyperæmia, so that the pulp cannot take up the drug. One cannot take out such pulps except with much pain to the patient, and expenditure of time. It may be partly anæsthetized, a little of it removed, and the process repeated, and so on, but it is very slow work. We have the same difficulty with arsenic in these cases. Where there has been recent exposure, or where the tooth has not been giving much trouble, I think there is nothing equal to cocaine and pressure. I had another failure yester-

day. The patient had complained of odontalgia, and I found an exposed pulp. The pressure produced no more effect on it than to enable me to make a better exposure. I could not repeat the anæsthetic effect. I filled it in with carbolic acid with a tinge of iodine in it, to see if it would stay comfortable and take on a healthy condition, so that I might try the process over another day, which I did. Because of the sensitivity I believe it to be a case of pulp-nodules, as the dentine appears very dense. I made an application of arsenic, and I shall see it again. I have used very little arsenic of late, and only in those cases where there has previously been inflammation of the pulp.

Dr. Joseph Head.—Recently I had two teeth partly broken off so that the pulps had to be destroyed. I drilled a small hole, and placed in it a small crystal of cocaine, that could not have been over a fortieth of a grain, and added a droplet of water. With the unvulcanized rubber on the tip of my finger I made pressure, which the patient hardly felt. I was about to drive the liquid farther up into the pulp, when I found, to my surprise, that it was absolutely anæsthetized. It occurred to me that this was due to the fact that I had partly injected the concentrated cocaine into the bulb of the pulp, and the circulation of the pulp had done the rest. This may explain the interesting fact described by Dr. Roberts, that some pulps are not capable of being anæsthetized by this method.

I was also very much interested in Dr. Darby's point of reaming out the pulp-canal. It seems to me an excellent hygienic plan. In the case of neurotic patients there is a tendency to pericementitis that follows the root-filling. I have found that when this is to be feared it is wise, instead of filling immediately, to defer the filling of the canal to the second visit, and after the pulp has been removed to place cotton, well soaked in carbolic acid, in the canal, and while the stump of pulp is under the influence of cocaine drive the cotton with the carbolic acid directly onto the stump and sear it. After this is done the patient can go away, and at his next visit it will be found that the canal is quite insensitive at the apex. Then, to avoid any putrescence, I fill the apical portion of the canal with mummifying paste for a distance of one-eighth inch, then complete in the ordinary way. With these cases I have had excellent results.

Dr. Robert Huey.—Many of us find, where there is irritation of the pulp and congestion, that it will never absorb arsenic or

cocaine. Under these circumstances, I apply a dressing of morphine and carbolic acid for two or three days, and find that the irritation has been sufficiently reduced to absorb anything without any undue pain. When a pulp is aching I never think of applying arsenic. Thirty-five years ago Dr. J. D. White, in addressing the students, gave us several points in the use of arsenic that I have never forgotten. "Never apply it at night," he said. I believe that is a very good idea. I apply arsenic as early in the day as possible, so that the pulp will be benumbed before lying down at night. He also said, "Put a little arsenic *into* the pulp."

Dr. Roberts.—I have used cocaine after arsenic and removed the pulp, though it was not dead from the effects of the arsenic. In one failure that I had with cocaine I had every reason to believe that I would have success, but I could produce absolutely no effect. After wasting considerable time I made an application of arsenic. Two days afterwards I went into the tooth, and to my surprise there was no trace of the pulp. I do not know what caused the pain.

Dr. Darby.—There is one point that Dr. Huey touched upon in connection with the use of arsenic that may not be new to the members, and yet it may be to some of them, that is, the application of arsenic at some point remote from the point of exposure. I learned many years ago that when a pulp was exposed an application of arsenic would often keep a patient awake all night. I learned that arsenic could be applied to a point remote from the exposure and cause no pain. Where I find a congested pulp and intend to apply arsenic, I put a sedative dressing of carbolic acid and morphine on the pulp and cover it over without pressure, and then drill into the occlusal or buccal surface and place an application of arsenic in the pit. The morphine paste reduces the congestion, while the arsenic devitalizes by way of the fibrillæ, and usually without pain.

Dr. Roberts.—I do not know how long Dr. Darby has been making that sort of an application of arsenic, but I have used it for a long time. Twenty-one years ago a patient came into my hands who had nearly every tooth in his head killed by having arsenic put into the cavity to reduce hypersensitivity. I came to the conclusion that if it would kill pulps through the fibrillæ when you did not wish it to, it would act as well when used intentionally. I have been using that method when the tooth was sensitive and I feared pain from the application.

Dr. J. T. Lippincott.—The question suggests itself, if the effect of the arsenic as placed under the enamel, as Dr. Darby mentions, is so far-reaching as to devitalize the pulp, why do we not have an irritation of the periodontal membrane from the application of arsenic applied to the pulp?

Dr. Darby.—It depends on the quantity, and sometimes it will devitalize the pulp if you put in a little arsenic at that point.

Dr. A. N. Gaylord.—I have not been altogether successful with the pressure method, but in nearly every case I have been enabled by it to anæsthetize the surface deeply enough to admit the insertion of the hypodermic needle, by which the remainder of the pulp is easily rendered insensible. It will be found that the pulp is injected with much less pressure than other tissues.

The hypodermic point should be cut off square, with edges bevelled, making it as sharp as possible. This will enable the embedding of the point with much less depth of insertion than would be required with the ordinary long bevelled point.

To avoid hemorrhage, I employ, in the cocaine solution, adrenalin. Whether this agent is familiar to you I know not; it is the active principal of adrenal capsule, and it is a powerful vasomotor constrictor. By its use hemorrhage is almost done away with. I also find it of great value in cocaine solution, where injections are made for the preparation of roots for crowns, there being much less bleeding of the gums.

There is another use of cocaine injection with the hypodermic needle. I have had several occasions where the removal of the pulp was necessary in teeth of people of advanced years, where the pulp was almost entirely obliterated, although sensibility remained.

I have taken a spear-point drill, grinding same to a long taper, with which I have drilled into the tooth in the direction of the pulp as deeply as the patient would allow; then by forcing into this hole, having a gradual taper at the bottom, the square-end needle, as before described, an almost water-tight joint is formed which will allow great pressure to be made, whereby the cocaine solution will be forced into the fibrilla of the tooth, producing anæsthesia. You cannot force the solution to any great depth into the tissues, but far enough to drill deeper and repeat the operation. By this method I have been enabled to reach the apex of several teeth with little or no pain.

Dr. Frank Gardiner.—My experience in removing pulps with

cocaine has been almost identical with that of Dr. Darby. I think it has been considerably over a year since I had to resort to the single application of arsenic. I have had one or two failures, and have had to treat the pulp by making applications; but I have not had to resort to arsenic. I fully endorse the idea of reaming the canal. I think that is a very strong point, and I also resort to the same method in the treatment of putrescent canals and in immediate root-filling. Of course, I would not fill immediately all putrescent canals with large openings at the apex. I do not think that it would be safe, owing to the danger of getting a slight quantity of septic material through the apex; neither do I always immediately fill a canal when extensive hemorrhage results from the removal of a live pulp. In all other cases I feel entirely safe in filling the canal at the first sitting, and have had more satisfaction and comfort from this method than I have from all the other methods combined.

Dr. Wilson Zerfing.—I would ask whether one can get anæsthesia of the pulp with cocaine-pressure after arsenic has been sealed in. I have repeatedly tried it with varying success, and very often with perfect success, in all stages of inflammation due to exposure. Aching pulps have come in, and I have introduced cocaine-pressure and extracted the pulp.

The President.—In using the pressure method the question arises whether the cocaine is forced into the substance of the pulp or around it, between the pulp and the pulp-chamber.

Dr. Darby.—If you put on pressure enough, it goes everywhere.

Dr. M. J. Schamberg.—I believe it is a very pertinent question whether anæsthesia is due mainly to the cocaine or to pressure. We know that both will produce anæsthesia, that cocaine if injected into tissue will produce a state of insensibility to pain, and we also know that by the so-called Schleich's method of infiltration anæsthesia, if we inject water or normal salt solution we can likewise produce insensibility to pain; and while I do not doubt that both are factors in the production of anæsthesia of the pulp, at the same time it is a point worthy of question which is the greatest factor, because I believe that we could then probably solve the reason why, when a pulp is partially removed by cocaine and pressure, you cannot remove the remaining pulp at a subsequent sitting by the same method, because there is not sufficient pulp there to fill the canal and you cannot exert the proper amount of pressure on it. By

pressure upon it you force out most of the blood, and, at the same time, cause extreme pressure on the nerve-filaments. Then the question arises as to whether the anæsthesia is as profound in the teeth with large apical foramina as in those with small ones for the same reason. It was intimated that anæsthesia in the pulp of wisdom-teeth is not as successful as in other teeth and the same in molar teeth. I believe that it is largely due to the fact that you cannot exert uniform pressure on the entire pulp. I would like to hear an expression of opinion in regard to this point. I have had no experience in this direction, and merely speak of it in a more or less theoretical way, using my experience with local anæsthesia for surgical procedures; but I would like to ask whether the hemorrhage is greater in teeth in which the sensibility is not entirely destroyed than in those in which the anæsthesia has been profound.

Dr. Gardiner.—In my experience I am inclined to think that the hemorrhage proceeds from teeth with large foramina, owing to the attachment of the outside tissues and the size of the blood-vessels entering the canal. The hemorrhage did not come from the sensitive pulps. I would also say that I often had to repeat the application of cocaine, not only to those originally in a perfectly live condition, but also to those that were partly dead or where some portion of the pulp was putrescent and the remainder alive. These filaments sometimes are stubborn, but with repeated application I have been able to remove them all finally.

Subject passed.

Dr. J. T. Lippincott.—Perhaps the members of the Academy may be interested in a case of response to temperature in a tooth from which the pulp has been removed. The patient, a man perhaps forty-five years of age, had a superior first molar in which there had been a gutta-percha filling for a number of years, which I removed, and beneath it found a putrescent pulp. The roots were thoroughly cleansed and dressed. The dressing remained there probably from two to three months. The man was away from the city, and did not immediately come back on his return. When I next opened into that tooth I found the root-canals in apparently perfectly sterile condition; the canals and cavity were filled. Within perhaps two or three weeks the patient complained of a sensitiveness to heat and cold. He complained that he was not able to take a spoonful of soup, cup of coffee, or drink of ice-water without extreme pain which lasted anywhere from half an hour to

an hour, and these paroxysms of pain were brought about not only by the contact with heat and cold in the mouth, but also when he went out in the cold. The tooth responded to applications to any point on its surface, but the most sensitive point was upon the distal surface at the gum margin. It failed to respond to ordinary applications for the relief of sensitive surfaces at that point, and upon the suggestion of Dr. Darby I applied the direct cautery, with, at first, but little apparent result, but after perhaps three applications the extreme sensitiveness disappeared and the tooth has become comfortable.

Dr. Darby.—That was one of the most interesting cases I ever saw. Dr. Lippincott brought his patient to my office. I began to question a little whether or not he erred in his diagnosis. The tooth had every appearance of a vital tooth. There was no opacity or discoloration, yet the tooth was so isolated that it could not be mistaken; the gentleman himself could not mistake pain in another tooth for pain in that one; neither could the test applications made come in contact with any other tooth. I explored the tooth all around with a probe, and finally it touched one point on the distal surface; the man winced and gave indication of pain. I touched it again, and he winced again. While we are not in the habit of finding devitalized teeth sensitive, even in their pericemental covering, yet we did find this sensitive spot there, and the man showed indications of pain every time I touched it. I suggested to Dr. Lippincott to use the galvano-cautery, and I am glad to know the result. The question is, What made that tooth sensitive?

Dr. James Truman.—It must have been due to the inflammation of the pericemental border. I had a number of cases where it was so hypersensitive,—indeed, I had one in my own mouth, and I had reason to know, therefore, the suffering it occasioned. It was quite as sensitive if touched with cold or heat. I have not used the actual cautery, which is very good; silver nitrate has generally done the work for me.

Dr. Darby.—This spot was an eighth of an inch below the gum line in that tooth.

Dr. Truman.—The pericementum is alive.

Dr. Darby.—This was not a recent resorption; it was an old one.

Dr. Truman.—At the point where the resorption ceases you have live pericementum.

Dr. Darby.—It could not be anything else with pulpless teeth.

Dr. Louis Jack.—Are you certain the pulp was entirely dead in the distal buccal root?

Dr. Lippincott.—I filled all three roots.

Dr. Huey.—How far did you go into those roots?

Dr. Lippincott.—I opened them up pretty thoroughly, though I did not carry my drill to the end of the buccal root, as I have heard some men say they do.

Dr. Jack.—I have heard of repeated instances where the upper molar was giving trouble, where the pulp was not devitalized at the end. I have had several instances; I had one in my own mouth, from which I suffered a great deal, although the endeavor had been made to devitalize entirely the pulp and fill a portion of the root, but it was not completely filled. I thought that the root disturbed me through reflex action.

Dr. Darby.—Was that tooth sensitive to cold or heat?

Dr. Jack.—I do not remember that.

Dr. Darby.—It was only sensitive to the touch, not so much to the changes, was it?

Dr. Lippincott.—In my case the tooth was extremely sensitive to thermal changes, to the application, for instance, of hot gutta-percha made on the buccal surface, besides the extremely sensitive point on the distal surface.

Dr. Roberts.—In that same connection with a devitalized tooth giving pain, I had an experience with a lower second molar rather different from that had by Dr. Lippincott. The tooth had given a good bit of trouble; I had tried to cap the pulp and keep it comfortable, but I finally took the filling out and went into it with cocaine. I filled both roots, and thought my trouble was over, but it was not more comfortable than before. I worked over it for two months, and then took the filling out of the roots, but could find nothing wrong, so again filled up the tooth. The patient went off comfortable, and has remained so. Now, what caused this I cannot say.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

AMERICAN MEDICAL ASSOCIATION, SECTION ON
STOMATOLOGY.

First Session, Tuesday, June 10, 1902.

THE Section was called to order by the Chairman, Dr. A. H. Peck, of Chicago.

Upon motion of the secretary, Dr. Eugene S. Talbot, of Chicago, the programme was accepted as published.

Dr. R. R. Andrews, of Cambridge, Mass., was called to the chair and Dr. Peck delivered the Chairman's Address, entitled "Physical Diagnosis as related to Dental College Curricula."

(For Dr. Peck's Address, see page 565.)

Dr. Peck.—It has been said that those in doubt as to a subject should refrain from writing at all. I have had some difficulty in selecting a subject on which to write for this occasion, and I am not sure but that you will come to the conclusion ere I have finished that I should have refrained from writing. I thought of writing along the line of the history of this Section, but that is printed in the Journal of the Association, and therefore was not advisable. A history of the work of the Section in the profession did not seem a proper subject, so I have gone out of the usual line of addresses of chairmen of such bodies as this, and have prepared a paper upon a specific subject,—“Physical Diagnosis as related to Dental College Curricula.”

DISCUSSION.

Dr. J. W. Williams, Boston.—There is a matter of great importance,—knowing how to refrain from too long continued operations. Some time ago I read a paper at New Orleans upon the importance of rest with the production and continuation of strength. It is a matter which I have studied for years, and find it of vital importance. In all vital forces there is an intermission. The heart has its times of rest; also the breathing. I have demonstrated the difference between the intermittent action of the muscles and continuous action by having a boy hold out his arm for half an hour. The muscles would soon become exhausted, but with the momentary intermissions in work, the muscles are strengthened. It has been too much disregarded that we must have rest at proper intervals.

There is also the importance of physical diagnosis, to determine whether a patient can bear not only continued operations on the mouth, but certain operations which may be short, as when a number of teeth are taken out at a time. My old preceptor would not take more than two or three teeth out at once. Even though the patient is anæsthetized, there is a certain shock to the vital forces greater than from the loss of fingers, because the operation is done in the mouth, the "gate of life," as it is called. The skin being more highly organized, there is more vital effort required in its healing than in a flesh wound. There are several recorded cases of great and serious depression of the constitutional vitality following the extraction of large numbers of teeth. In one case, in which ether was given, the patient after the removal of fourteen teeth was confined to bed from exhaustion not only from the shock, but from the effort of the system to heal the wounded surface, and died in about a fortnight. In another the patient lingered for about three weeks. Such occurrences seem to be entirely unknown in general practice. I have known instances of vital prostration of several years' duration from the extraction of a large number of teeth. The removal of the teeth from the alveoli seems to have a far more depressing effect than the smoothing down of the teeth for the preparation of a plate fitted over them. I have seen several old persons whose lives, I think, were prolonged by having the roots remain and their mouths put in perfect condition in this way.

I wish that the matter of refraining from prolonged and serious operations either lying or sitting might be so continuously alluded to and condemned that it would be more generally considered reprehensible to do such operations. It is a vital principle of continued health and strength that there be intermission of rest, with a quiet effort at proper intervals.

Dr. Vida A. Latham, Chicago.—I think a subject which should precede physical diagnosis is physiology. There I believe to be the greatest mistake of all our dental schools. In fact, I may say I regard it as a disgrace that a country like America should give no course of physiology in the dental colleges. The student may know nothing about the relations and functions of the body, but in nine cases out of ten he is an excellent anatomist. In the study of anatomy there are a certain number of operations and dissections, and a man, therefore, pays attention to that kind of work, whether he is a young medical man or a young dentist. Personally,

I am much in favor of urging the dental profession to have a better course in physiology, especially of a practical laboratory nature. Let a student take a heart, let him examine it, see it beating in the animal, and let him try the experiments and see the effects of the drugs. In that way only can we teach our physiological work. As a teacher of pathology I have had that stumbling-block to encounter to such a degree that I believe the average dentist cannot properly teach because there is no distinct training in practical physiology.

I would ask that the courtesies of the floor be extended to Professor Gage, of Cornell, with whose work as a teacher of histology and physiology we are all familiar.

Professor Gage, Cornell.—I have just had a year of teaching, and I would like to learn something in readiness for next year. It seems to me that the doctrine of Dr. Peck's paper is perfectly sound, and I am exceedingly glad to hear Dr. Williams speak of the undesirability of long-continued operations with the demand upon the vital force. As Dr. Latham says, if the student has a thorough training in physiology he will better appreciate what he can do with the living organism than in any other way. Naturally, to thoroughly appreciate physiology, he must have a knowledge of anatomy. I would welcome every effort to increase the knowledge of the members of the dental profession, and physiology I would say is a fundamental subject for the student to learn. Anatomy, of course, is necessary, but physiology is really at the base of all processes that make dentistry valuable. The man who says that the medicine or operation cured his patient, I know, is not a physiologist; but if he says he gave nature a chance, I know he is a physiologist.

Dr. G. V. I. Brown, Milwaukee.—The paper of the chairman, it seems to me, calls for more than an ordinary discussion. What Dr. Latham said about the course in physiology is true. We have not such a course as we would like to have as a foundation, yet with such foundation as we have we must do the best we can. In the college in which I have, until recently, had charge, we have had to cover the subject of physical diagnosis in a practical way. I have found several difficulties, one of which was to convince others with whom I had to associate of the end and aim of this course. In the second place, the student himself has much more to say than is ordinarily taken into account, and the students as a body object

to having additions to the curriculum. Physical diagnosis is considered a dry thing unless the lecturer is particularly fortunate in his presentation. To make the study interesting we conceived the plan of dividing the Senior class, have the men strip to the waist, and have the other half of the class study, under the director, auscultation and the other simpler means of physical diagnosis. This we found very successful, and we have arranged to add to the plan this year by taking the men to the county hospital, where they might see, in addition to the comparatively perfect specimens in their class, the pathological conditions in hospital patients. This could be done in almost any college. It is an entering wedge, and, having instilled the idea of the necessity of such a course, we may in time be able to secure the teaching desired. I think it would be wise to develop the course in some such practical way. As Dr. Latham has said, we ought to have the foundation stone of a complete course in physiology.

Dr. G. F. Eames, Boston.—I have been much interested in the matter of widening the field which the dental profession shall cover. I devoted some years to the study of the throat and nose, and I am sure that those studies have assisted me in dental practice. I have devoted other years to the study of the general practice of medicine, and I am sure that also has assisted me; but I have been negligent in my study, and I have felt unable in some cases to make an accurate diagnosis in regard to conditions of the heart and lungs when it was necessary to give the character of the pathological condition. I have felt in later years that the physician who is doing such work daily should make diagnoses for me. I feel that we are just in the beginning of this matter suggested by the chairman. It is a most excellent idea, and one which will raise us to a much higher level than we have ever before attained. We must give the matter more study and put it into actual practice, in order to cultivate the ear in auscultation and the hand in percussion and palpation. In that way only can the dentist become proficient in the diagnosis of pathological conditions. I feel that by the experienced man much for dental purposes can be told by simply looking into the face of the patient. If he is then able to make an accurate diagnosis, let him do it; if not, the case should be given into the hands of a man who can.

Dr. G. Lenox Curtis, New York.—It seems to me that, to give the dental practitioner what is needed in the line of physiology,

the dental schools should be connected with medical institutions, where they might receive their instruction in all the essential medical branches, the same as does the medical student. It is essential that dentists should have a knowledge of physiology as well as of anatomy, and, as some others have said, they lack perhaps in this more than in any other department. I think the matter is highly important, and I should like to see some action taken at this meeting recommending, or, perhaps, making it stronger, appointing a committee to see if such a thing could not be brought about in dental schools.

Dr. M. L. Rhein, New York.—This is a subject in regard to which I believe we are all in accord with the essayist. The only point of criticism, if it might be termed such, that I would make is that the paper did not go far enough. Education in this specialty of medicine should be as far-reaching as in any other. To physical diagnosis I would add a study of the urine, and the blood. I coincide with the severe criticism of Dr. Latham upon the lack of thorough fundamental education in dental institutions. I believe the solution of the problem lies in the association of the dental institution with the medical in the universities. I think that, so far as possible, this Section should teach that doctrine. It is folly for us to attempt to improve the form of dental education at present in the United States, for the simple reason that the majority of members of the National Association of Dental Faculties, who control the system of education of dentistry in this country, are owners of preparatory schools, and their interests have never tended towards the higher education of dentists.

Dr. Eugene S. Talbot, Chicago.—I consider the paper of our chairman very timely. There are a great many changes which should take place in medical as well as dental education, and I second the remarks of Dr. Rhein in regard to this matter. The time has come when we must take some stand in regard to dental education. Yesterday the National Board of Medical Faculties spent some hours in talking over the relation of dental colleges to medical colleges, and it was only by a mere chance that the matter was laid over until next year, and that they did not divorce the dental schools entirely from the medical. If there is one class of patients to whom a knowledge of the general condition of the body is necessary more than another, it is the dental patients, and the dentist knows little or nothing about the conditions under which

these patients come to him for operation. The nervous system, upon which we as dental students and practitioners have been so poorly educated, has more to do with our patient than any other one thing. The development of the face, jaws, and teeth, the decay of the teeth, and diseases of the alveolar processes are all based upon trophic neuroses, yet we know nothing about the nervous system in that respect. Such patients are neurotics, and, as Dr. Rhein says, we should be educated thoroughly as medical practitioners in order to treat our patients successfully. This Section should insist that dental students shall be educated in the fundamental principles of medicine with medical students. It has been my privilege this winter to lecture in five or six of our university dental schools, and I am surprised to see the price that the dental faculties are paying for the sake of isolating these two medical departments. We have in the West, and I suppose you have in the East, three or four different departments, with different sets of teachers, with expensive buildings and apparatus for the teaching of the different departments of medicine, when all might be educated in one building and with one set of teachers. I think the time will come very soon when this subject will be taken up from an economic as well as an educational stand-point. I am very glad that our chairman has presented the subject to us in the way he has.

Dr. D. E. Hoag, Brooklyn, N. Y.—I voice the sentiments already given by some of the members present. I was not fortunate enough to hear the paper, but the advancement of dental education along the lines suggested is not so slow as we think. Although dentistry is old in mechanical science, it has only been a few years since it was put upon a professional basis. On the other hand, there has been a lack of union, a lack of sympathy, between the dental and medical professions. The dental profession will soon be on a higher plane, because better men are entering it, and the requirements are also becoming higher.

The remarks made relative to physical diagnosis were very pertinent, but, from my point of view, I regard physical diagnosis as an art. The study of physiology, histology, and kindred subjects is more distinctly a science. Though we study an art, we can only become proficient by practice. A man may take a course in physical diagnosis, but unless he is in a position to practise it, he becomes very rusty. A dentist does not always have the needed opportunity.

The future will show a closer union betwixt medical and dental

schools. I began the study of dentistry with the sole idea of studying it and nothing else. During my first year in college I saw how much there was in medicine, so that I took the other course in addition. I was very fortunate in having for one of my teachers Dr. Latham, who is here to-day. She imbued me with a sense of diligence in those branches which men in college regard as almost wholly useless.

Dr. E. A. Bogue, New York.—The idea which Dr. Peck has presented to us I think none will venture to oppose, but what the ordinary dental student is able to digest and put into practice is a very different thing. It seems to me, however, that we are moving towards a oneness with the vast medical world with considerable rapidity; not because of our efforts, perhaps, but because of what we may term the forces of development. Society around us is becoming more intelligent, and is demanding more of a dentist than formerly. When I was a child a man who was a good repairer of watches was therefore expected to be a good dentist, because his fingers could do good mechanical work. Whether we are able to superadd physical diagnosis and a thorough knowledge of physiology to the present curriculum is a question which those more engaged in teaching than I are better qualified to answer. The curriculum as it stands to-day is nearer what the entire medical curriculum was twenty-five years ago than we are wont to imagine.

As to the extension of the dental curriculum, I hope it will be carefully considered whether the student to-day admitted to the dental college is able to carry additional work.

Dr. J. L. Williams, Boston.—It is not so much what a student likes to study, but what he ought to study. If the instruction is deficient, it should be made adequate. This matter of resolution I think is a good suggestion, and I think it is the natural out-working of forces. There is among the laity a more general appreciation of the idea that the human system is sympathetic in parts and controlled by similar principles in health and disease. Students have often said to me that they would like to take a medical course in connection with the dental, but that they have not the time. I tell them that they are right, and that the specialty of dentistry, as any other specialty, belongs to the human system.

Dr. R. R. Andrews, Cambridge, Mass.—I believe thoroughly in having a medical education in connection with the dental. I put my own boy into school with the idea of having him secure a medi-

cal education and the dental afterwards. He, however, chose surgery. I heartily endorse the paper, and I think cases come to us needing just such examinations as suggested by the chairman. The general trend of dental education in the East is upward. We have added another year, making the course four years in one of our Eastern colleges. This will soon be adopted, I think, by Harvard, and this will soon be followed, I believe, by the requirement of an entrance examination equal to that in medical schools.

Dr. Peck (closing the discussion).—I will take time only to say that I am very much gratified with the uniform approbation with which the subject presented in the paper has been accepted by you. This is a subject that has engaged my attention for some time. I have been thoroughly imbued with the necessity of proper education along these lines for dental students. I have in the past endeavored to connect this line of thought with our college work, but until the past year, so far as my knowledge extends, there has been nothing like a complete course in this work attempted by the colleges. The college with which I am connected gave a course in Physical Diagnosis last year. As one of the speakers has said, this is a subject that cannot well be taught by lectures alone, but must be demonstrated. Students have had opportunity to study these methods on living subjects, and we have found it anything but a dry subject. I believe I am correct in stating that greater interest was not manifested by the class in connection with any other work.

I most heartily endorse the broad scope that *Dr. Rhein* has given to the work. I did not speak of all the subjects looking to a higher preliminary education, because that would have made the paper too long. The omission was by no means because I have not given them much thought.

(To be continued.)

NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the New Jersey State Dental Society convened at the Auditorium, Asbury Park, at half past ten o'clock, Wednesday, July 16, 1902, the President, *Dr. Wm. L. Fish*, of Newark, in the chair.

The attendance was unusually large. After the usual prelimi-

naries, the Annual Address was read by the president. He first referred to matters of purely local interest and then invited attention to the large number and variety of dental exhibits, so well arranged in an adjoining room, perhaps the largest display ever seen at a State dental meeting. He spoke of its educational value as showing from year to year the advances made, and of its value to the members, giving them an opportunity to examine and become conversant with new instruments and appliances at their leisure, many of which may be helpful. If these were brought to their offices by an agent during business hours they would probably be curtly dismissed. He referred to the persistent and successful efforts to secure dental services for the army, and urged the Society to still support the efforts now being made to extend the same to the navy. Referring to the large increase in membership, he urged that every effort be made to bring out the young men, and to encourage them to take an active part in all professional work. The science of dentistry has become so broad that no one mind can compass all it embraces. It is therefore important that each should find for themselves that specialty for which they are best fitted, not only in practice, but also in society work, that they may be ready to take the place of those who year by year are called away. He spoke feelingly of the loss the profession had sustained during the past year by the death of many of its most prominent members.

Dr. Stockton, in discussing the address, spoke of the marvellous progress the world had made, and is now making. "It is only," he said, "by comparing the present with the past that this can be realized. We accept the changes this progress makes necessary as a matter of course, with but little thought of the enormous efforts which have brought them about." He referred to the years of study, the numberless experiments, and the immense labor before it was possible for Edison to light a room by touching a button, or to perfect his invention which enabled people a thousand miles apart to talk as freely as though face to face. Have we as a profession kept up with the procession? We do beautiful work, we have finely prepared gold, improved alloys, and numberless cements, but do we save more teeth than we did forty years ago? He answered in the negative, and suggested that the great need of to-day was a cement that could be readily adapted to the cavity, and that would remain there.

Dr. Meeker congratulated the Society upon its position as a

leader among dental societies. Its earnestness, its progressiveness, and its success was due to promptly putting its new members to work. As soon as possible each new member is put upon some committee, it may be an unimportant one; it is, however, an entrance into society work. Those who show an ability and a disposition to work are advanced step by step, not as a compliment, but as a reward of merit. As a result, the affairs of the Society are managed by active, earnest, tried men; and the Society is an active society, constantly changing its workers, but never its methods, and always has some one ready to step in wherever a vacancy occurs.

After the transaction of routine business the meeting adjourned until evening, the afternoon session being omitted to allow the members to become acquainted with their surroundings. Many spent the afternoon examining the exhibits in the large hall adjoining the meeting-room.

The first paper at the evening session, by Dr. J. Lenox Curtis, of New York City, was entitled "Electric Ozonation in the Treatment of Neuralgia." This was upon a somewhat new application of electricity, modified so as to utilize an interrupted current of very high voltage and low amperage for the detection and cure of diseased conditions. The apparatus used was very similar to that by which X-rays are produced and Geisler tubes operated. When in operation ozone is freely generated, making it an effective sterilizer, and as such it may be used to purify the atmosphere of a room, or by proper manipulation of suitable adjuncts to have a local antiseptic effect. It is said to relieve certain forms of neuralgia by removing their cause, to be useful in many diseased conditions by bringing about the destruction of broken-down tissue and stimulating repair, and to be especially valuable in promptly detecting actual or threatened morbid conditions.

This was followed by a paper entitled "Ethnographic Odontography," written by Dr. Alton Howard Thompson, of Topeka, Kan. In the absence of the writer, it was read by Dr. C. S. Stockton. The paper was a purely technical one, and, however valuable it may be, was not suitable for a State dental meeting. It is a mistake to present such a paper read by any one but the author. Dr. Stockton probably read it as well and as effectively as any one but the author could have done; no one can do justice to a subject with which he is not familiar. Such matters should be presented

in the journals direct, where they may be read carefully and at leisure. However important the subject may be, or however well presented at a dental meeting, it is one experts only can discuss; unless such papers are very short and terse, and interestingly written, they are only time and patience wasters.

This ended the evening session.

The morning and evening sessions of Thursday were mainly occupied with the reading and discussion of a paper by Dr. R. Ottolengui, of New York City, entitled "Should Children's Teeth be filled with Gold?"

The doctor's position, as understood by the writer, was that, so far as recurring decay was concerned, there was nothing in the teeth themselves to counterindicate the use of gold for filling carious cavities of children's teeth. With proper attention to cavity preparation, especially with a view to protect its margins, gold may be inserted with full confidence that it will prove an effective and lasting operation. He fully appreciated the limits imposed by the little patient's ability to bear the necessary manipulation, and the importance of properly protecting immature portions of the tooth; and he dealt with the question of its expediency in those cases only where it could be properly placed. In such cases, he contended, it made the best possible repair. He supported his position by reading notes endorsing his conclusions from well-known dental histologists. The discussion was quite animated, but the matter has so often been gone over that very little, if anything, new and directly pertinent to the question was brought out. The real point of the essay was missed, and argument had upon matters which the essayist had expressly excluded. He freely admitted that there were many cases where, on other accounts than incompatibility of gold and children's teeth, gold was not the best.

The clinics on Thursday afternoon, I was impressed, were not as instructive as usual. They were scattered, the clinicians were difficult to find, and most of them were in positions so confined that but few were able to see what was going on. To make dental clinics what they should be at a meeting like this is an exceedingly difficult problem to solve; especially so when, as in this case, thirty-four had to be provided for. This difficulty is increased when, as usually happens, some fail to appear.

The exhibits were well arranged, and formed a very attractive feature of the meeting. I noticed but few devices that could be

considered really new. Gideon Sibley, of Philadelphia, exhibited his latest improved chair. It has a range of from sixteen to thirty-seven and a half inches in height, and a large number of movements, all controlled by cams, making it easy to operate and very convenient.

The Buffalo Dental Manufacturing Company had a set of bolts for vulcanizing flasks, each provided with a spring, making a very simple arrangement for closing the flask by spring pressure without adding to the usual equipment. They are sold at the same price as those in ordinary use, and may be used on nearly all makes of flasks on the market. The advantage of spring pressure in closing flasks, saving fracture of casts and teeth, and saving time, is very great, especially so when applied at three points. They are well worth a trial. They also make a variety of brass nozzles to screw on gas-fixtures for conveniently attaching rubber hose, some straight, others more or less curved, to prevent the hose "kinking."

I noted with much pleasure an exhibit by P. Blakiston's Son & Co., and another by Lea Brothers, both of Philadelphia, of a choice selection of books a dentist should have and read. Both exhibits were in charge of gentlemen well posted as to the relative merits of the works shown, and well able and willing to give any information desired. Few dentists, especially those living at a distance from the larger cities, are posted, or have opportunity to conveniently make themselves familiar with the latest or the best professional literature. It was a pleasure to see so many avail themselves of the opportunity thus offered, and to listen to the suggestions of those in charge, who played the rôle of exhibitors rather than salesmen, and to further see the memorandum book, in which orders were entered, so often used. If there is any one thing the profession needs more than another, it is more readers,—larger libraries in dental offices and a better acquaintance with the current professional literature of the day.

It required a full half-day to do justice to the exhibits, and was a full half-day well and profitably spent.

The last day was occupied with society business. The following officers were elected: President, Frank L. Hindle, of New Brunswick; Vice-President, Herbert S. Sutphen, of Newark; Secretary, Charles A. Meeker, of Newark; Treasurer, Henry A. Hull, of New Brunswick.

W. H. T.

Editorial.

THE NATIONAL DENTAL ASSOCIATION.

THIS body met at Niagara Falls, July 28, with the President, Dr. J. A. Libbey, of Pittsburg, in the chair.

The attendance, as usual at Niagara, was large, numbering from four to five hundred, completely crowding the hotels and driving the surplus into other quarters.

The meeting began its first session without any preliminaries, the routine business being given into the hands of the council. The address of the president was full of practical suggestions, which, if carried out, would materially aid the well-being of the organization.

The papers presented were much above the average from a scientific as well as a practical view, and the discussions were well sustained. The general feeling seemed to be that it was one of the best meetings that the National Dental Association has held since the reorganization. The exhibits were large, and during intermissions the rooms were crowded to excess. It is certain, however, that hotel space is not satisfactory either to the exhibitor or dentist. Coming, as the writer did, from the fine exhibit at Asbury Park and the New Jersey State meeting, it seemed defective, but these national meetings cannot have an "Auditorium" to carry around with them. A very large proportion of those in attendance gave more time to an examination of the exhibits than to the meetings. This must be expected at all national and State gatherings, and especially the former. A very large number make sacrifices to attend this meeting, well aware that they can see new and old appliances there, under one roof, that it would be impossible for them to examine otherwise. Many practitioners are for the entire year cut off from the great centres, in isolated regions, and this annual experience brings them in touch with the progress made in the mechanical side of dentistry, giving them an inspiration and help not obtainable otherwise. They feel that this, to them, is so important that they can sacrifice the scientific side of the convention for a more convenient day, which, of course, never comes. It is very evident that dentistry is more and more becoming separated

into two distinct divisions, neither of which can be said to be in entire harmony with the other. These two are represented by the man, on the one hand, who loves original research into the unsolved problems, and, on the other, the man who spends otherwise unoccupied time at the bench in his laboratory. The result is a small body of students and readers and a very large class who care little for those things that make a profession, but much for that which enters into the development of an art or a stimulant to trade. It is useless to contend for or against these mental proclivities. They are with us, and must be met and the various tastes provided for, trusting to a future generation to correct these peculiarities and develop a different standard of mental growth. There was a time when the national body refused to have clinical demonstrations at its meetings. The attendance fell off, and the Association was obliged to restore these, and at once the attendance increased.

At the present meeting provision was made for a large number of interesting clinics. These were arranged upon the porticos and lawn of the hotel, thus giving ample room and pleasant surroundings. These comprised operations in minor oral surgery, porcelain inlays, bleaching teeth, orthodontia, crown- and bridge-work, etc., etc. To the writer these clinics seemed to have a special value, as they were so arranged as to cover almost the entire procedures in dental work.

The council of the national body expressed itself positively against conferring the degree of Doctor of Dental Surgery, as proposed by the New York State Dental Society. It was fully recognized that the D.D.S. was national, and that no section of the country had the right to break down, in the slightest, the respect which belonged to this title, or any other secured by years of consistent undergraduate work.

The Association next year will go South, and there can be no doubt but that our Southern brethren will strive to make it a memorable occasion. Every effort should be made in the North to aid them in securing a satisfactory meeting. Much can be accomplished in the next twelve months by systematic efforts in the sections, but to do this effectively it must begin at once. The evidence of improvement in the work of these subordinate bodies was very evident at this meeting, but a more strict censorship is still desirable. The ideal of the writer will not, however, be reached under present methods of organization. It needs no prophetic knowledge to say

that, when this present century is well advanced and the graduates of a four years curriculum are in the ascendant, the present crude efforts will have had their day and be abandoned for more effectual and thorough work. The question will not then be asked, What does a man believe? but, What does he know? The man of facts will take the foremost place, and the man of imagination will have been retired to the professional background, and when this time arrives there will be a dental profession worthy to be named with the honorable callings of the world.

THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THIS body met at Niagara Falls, July 23, with a full representation, from New England to California.

This Association was originally very exclusive, and the dental profession had but a limited knowledge of its operations, and, in consequence, was indifferent as to the result of its work. As dental colleges multiplied in numbers and power, through their connection with the great educational systems of the country, there came an increased desire to understand the methods and the work of this organization. By some it has been regarded as a dental educational trust; by others, as a body meeting annually as a mutual admiration society, but by neither of these as an association with but one aim,—that of advancing the standard of dental education in this country.

The object of those who organized it in 1884 was made clearly evident by their action at the initial gathering. The unsettled condition of dental education at that time, with its loose methods, forced this organization into existence, and through its persistent efforts the quality as well as the reputation of the dental profession has been continually advanced.

The success that followed the original efforts induced a number of the medical colleges to attempt a similar organization, and this has been carried forward with some success, but the difficulties attending a unity of effort in medicine are far greater than in dentistry, and the result has, therefore, not been as far-reaching as that effected by the Dental Faculties Association.

It is now eighteen years since this body was launched on a troubled sea. During this period its work is represented in the union of all the dental colleges of the United States and Canada; the establishment of a broad curricula comprising all the principal foundation studies in medicine; the extension of the entrance examination to cover a liberal preparatory examination; and the increase of the period of study to four years. It is not probable that the limit of advancement has been reached, but from time to time suggested improvements will be adopted.

The session just closed was not remarkable for any special legislation. This was not anticipated. The routine work of the organization, although important and interesting to members, contained nothing of interest to the general profession. There is probably no organization, outside of State and national legislative bodies, that requires more tact to manage than this one. The marked individuality of character that prevails in the membership makes the duty of presiding officer no sinecure, and few have been found equal to its exacting duties. Appearances are, however, often deceptive, and this is true here, for out of much confusion of tongues, and oftentimes acrimonious debate, there has resulted the marked advances to which previous allusion has been made.

The Foreign Relations Committee presented its annual report, but this year it was divested of its usual number of bristling orders; in fact, was practically a repetition of those of preceding years. Heretofore, and noticeably last year, it laid down a series of laws for the government of dental colleges in their relation to foreign dental schools and foreign graduates. Its assumptions were of such a dictatorial character that some of the schools refused absolutely to enforce them, contending that they had never been legally adopted by the Association. This opposition became so formidable that these rules were laid over for future consideration. This committee has accomplished some good work, but it has become a source of constant irritation and has practically made the Association of Faculties a body secondary to its orders and that of the Foreign Advisory Board. The chairman and several members of this committee are, at this writing, in attendance at the conventions in Stockholm. It is hoped that they may absorb some wisdom in relation to international affairs, a knowledge much needed. That they will be able to bring about an harmonious adjustment in the methods of dental training between the various countries is too

much of a Utopian idea to be even considered. That the social mingling may be beneficial there can be no question, but until national peculiarities change this cannot go farther than an interchange of courtesies. It is thought that the Foreign Relations Committee and the delegates from the Faculties Association will return home with an assorted cargo of words and with some ideas, but with no formulated plans for a reciprocal curriculum.

Whether the chairman of the Foreign Relations Committee will retain that position the coming year is somewhat uncertain. He declared positively that he would resign. If this is carried out, it will require a wise judgment to fill the place, with its responsible duties. Some of the higher dental schools have had a sufficiency of dictation, and if the Association of Faculties is to remain a united body all its committees must be made to understand that they are servants and not masters of the organization. When this lesson is thoroughly absorbed, the Association of Faculties will become in the future a power for good in dental educational circles, as it has been in the past.

Domestic Correspondence.

BOSTON LETTER.

TO THE EDITOR:

SIR,—The past few months have been of great importance to the dental societies of Massachusetts. With the coming of summer and the completion of school courses there is a culmination of dental efforts. The Harvard Odontological Society began its twenty-fifth year with Dr. Julius G. W. Werner occupying the presidential chair. That he fills it worthily goes without saying. His genial manner and his efforts to obtain every possible information from every source make the papers, and especially the discussions which follow, of great interest. Then the introduction of speakers from the medical profession has broadened the scope of the Society and opened paths of research which we ordinarily pass by with little notice.

Again, this Society has changed its constitution and by-laws so

that its candidates for membership now must be graduates of two years' standing. The society was growing so rapidly that it was fast becoming unwieldy, and while there is no desire to check healthy growth, it was felt that by passing these measures a more sturdy if no less rapid increase would result. The Harvard Alumnae held their annual meeting on the 23d of June. The exercises at the dental school were of even more interest than usual. We came and saw, and on every side there was still more to see, and so many were the attractions that it was hard to choose one and see it through, and thereby slight something else.

There was a large number of patients present showing work of every variety, and the degree of skill shown speaks well for the future of the profession. It was very interesting to notice how styles change in dentistry. Three or four years ago it was the fashion to band all porcelain crowns, but I noticed that there had been a general return to the Latimer type. And their superiority in suitable cases could not be doubted. There were the two crowns side by side, the one with purple, congested gums, the other clean and healthy. Sometimes we see in clinics that which astounds us, and that was certainly the case with myself when I saw the hydrochlorate of cocaine injected in amounts of one grain and upward. To be sure, the gentleman who gave this demonstration said that its toxic effect was overcome by the other ingredients, but I could not help wondering whether he really appreciated the missile he was using and its terrible effects in some cases. Nine hundred and ninety-nine cases might be all right, but is it worth the while if he should lose the thousandth?

The banquet in the evening was even too much of a success, as more came than there were seats for. This was due to the fact that many of the members did not reply to the secretary's notice. The Rev. Alexander McKenzie gave a very fine address, the custom being that the annual address shall be given by some one outside of the profession, and usually has no direct bearing upon professional matters. President Elliot was present, and spoke at some length. His remarks were received with great enthusiasm. The warm regard in which he is held and the close personal interest he has for the graduates was never more in evidence than during that evening. After listening to speeches by each of the professors of the school, the meeting was adjourned until the following year.

The meeting of the Massachusetts Dental Society at the Hotel

Brunswick drew a very large number of dentists to the city. The State society represents everybody, and consequently has a much larger field of influence than any other organization. Here also the dentist is brought in touch with the manufacturer, and the result is of the greatest benefit to both. Nowhere has the dentist a better opportunity to see what is being done elsewhere in the profession. And the practicability of the clinic is enforced by an opportunity to see the dealers' products and to obtain them, or to test their usefulness. One thing that impressed me was the presence of several agents for companies which manufacture specialties for the general practitioner. It was another link to show how the medical and dental professions are steadily drawing closer, so that co-operation is essential to both and is becoming more so every day. It is greatly to be regretted that these meetings cannot be held somewhere where there would be better opportunity for every one to see and understand the clinics. At present a favored few in front have a splendid chance to see, while the rest can only catch an occasional glimpse of the operator and patient, to say nothing of seeing what is being done. One way that this could be remedied would be to have circular portable rails so as to keep a fair space about the chair, and also small portable amphitheatres could be made, stored away when not in use, and brought out as the occasion requires.

The banquet in the evening was well attended, and when the hour of adjournment came the feeling was that a good deal had been accomplished gastronomically and otherwise, and that every one was entitled to a good summer's rest.

"HUB."

Obituary.

DR. ISAAC J. WETHERBEE.

THE following members of the Board of Trustees of the Boston Dental College have learned with regret of the death of Dr. Isaac J. Wetherbee, a member of this board since it was organized as a corporation in 1868, and its first president, which office he held almost continuously from the time of such organization until 1899, when, in consequence of the changed conditions and methods of

dental education, it seemed wise to suffer the college to become the Dental Department of Tuft's College. In recognition and remembrance of the unremitting constancy and devotion with which Dr. Wetherbee during this long period of time performed his official duties, this board has caused this minute to be made upon its records.

W. P. LEAVITT,
S. G. STEVENS,
B. S. LADD,

Committee.

Boston, June 26, 1902.

Miscellany.

BACTERIA ON MONT BLANC.—In the *Comptes Rendus* of the Paris Academy of Sciences, M. Jean Binot prints an account of his researches in the observatory on the summit of Mont Blanc, where he has been conducting bacteriological investigations at the highest altitude yet explored. As was to be expected, the air on the summit, away from the observatory, contains scarcely any bacteria whatever, only from four to eleven being detected in as much as a thousand litres, while in somewhat similar volumes none whatever was found. As a rule, at lower altitudes the number of bacteria increased, as, for instance, at the Place de l'Aiguille fourteen, and at Montauvert forty-nine, were found in a thousand litres. Inside the observatory, in which M. Binot spent five days, from two hundred and sixty to five hundred and forty microbes were found in the same volume of air, these being probably introduced by M. Binot and his companions during their temporary invasion of the building.

The investigations were not, however, confined to the air on the top of the mountain, but included also bacterial examinations of freshly fallen snow, old snow, ice on the surface and below, glacier water, and mountain streams. Freshly fallen snow, even when sampled in large quantities, frequently contained no bacteria whatever, while in snow which had lain for some time usually only from one to two individuals were discoverable per cubic centimetre.

At the foot of the glaciers the surface snow contained rather more, the number varying from six to sixty-five per cubic centimetre at the Mer de Glace.

Glacier water is usually very pure, and, like the glacier ice from which it is derived, was found to contain a number of yeasts and some streptothrix; but while high up such water contained but from three to eight bacteria per cubic centimetre, a stream at the foot of the Glacier des Bossons contained ninety-five, while the water of the river Arve, at Chamonix, was found to have as many as seven thousand five hundred and fifty per cubic centimetre. Altogether, M. Benot examined one hundred and twenty-one samples of air, ice, snow, and water, and isolated no less than three hundred different varieties of microbes, one-third of which number he was able to identify as having been already studied and described, and the residue are being carefully investigated by him at the present time. Even the alluring and beautifully clear and crystalline spring water on the Montauvert road was condemned by being found to contain a dozen virulent colon bacilli in a cubic centimetre. Doubtless this pollution was due to the cattle on the mountain.—*Scientific American*.

THE ACTION OF LIQUID AIR UPON BACTERIA.—Myer refers to the numerous investigations regarding the effect of zero temperatures on bacteria. According to most authors, the effect is purely an inhibitive one. He refers to the experiments of A. C. White and Macfadyen with liquid air.

White claimed that pure cultures of bacteria were not killed by exposure to the action of liquid air. Macfadyen found that liquid air acting on bacteria even as long as a week failed to kill them. Myer tried the effect of liquid air on anthrax spores, and on the staphylococcus pyogenes aureus. He exposed the organisms to the air in the form of a spray, or else put liquid air right on the culture, or put the test-tubes in the liquid air. The time of exposure varied from five seconds to fifteen minutes. In no instance did he find death of the bacteria; in fact, not even a loss of any of their properties resulted. He proposes to publish experiments later bearing on the action of liquid air on bacteria in inflamed tissue.—*Albany Medical Annals*.

LOCAL ANÆSTHESIA BY HIGH-FREQUENCY ELECTRICAL CURRENTS.—A method of replacing the ordinary anæsthetics used in dental surgery by the action of the high-frequency currents has been brought out by Messrs. Regnier and Didsbury, of Paris. M. d'Arsonval has already shown that high-tension and high-frequency currents have a local anæsthetic effect, and the experimenters wished to see whether this could not be used to advantage for dental operations, and so do away with the inhalations of gas, which are not without danger to the patient. In case of extraction they found it to work quite successfully. A d'Arsonval-Gaiffe apparatus was used, having a coil which gave a 1.2-inch spark with a rotary interrupter and an oil condenser. The apparatus is connected to an Oudin resonator, one of whose terminals is joined by a flexible cord to an electrode fixed under the jaw. The electrode is moulded in plastic material and covered inside by metallic powder and a layer of tin-foil.

Under these conditions the current gave the patient no sensation other than a slight heating in the region covered by the electrodes. It was found that a tooth with one root was made completely insensible by the application of a current of one hundred and fifty milliamperes for from three to five minutes, while the larger teeth needed from two hundred to two hundred and fifty milliamperes for from six to eight minutes. As to the use of the method for more prolonged operations, the experiments are not as yet conclusive, although they are favorable on the whole.—*Scientific American*.

AN ORIGINAL METHOD OF ADAPTING BACKINGS TO FACINGS.—At the seventeenth annual meeting of the Minnesota State Dental Association, held at Minneapolis, in September, 1900, Dr. A. E. Peck demonstrated an original method of adapting backings to facings. An ordinary rubber block is used, with holes for the reception of the pins. The backing is placed on the tooth, which is then placed on the rubber block, the pins being inserted in the holes. Another rubber block is placed on the porcelain and struck with a mallet until the desired adaptation is obtained. There is no danger of breaking the tooth by the force of the blow.—*Dental Review*.

DIAGNOSIS OF PRESENCE OF PUS BY HEAT.—Lewin, of Berlin, claims that by the use of the local application of heat we can make a diagnosis as to whether an acute inflammatory process has gone on to suppuration,—as, for example, in case of appendicitis. He asserts that, if pus has not yet formed, the application of heat will be a comfort to the patient; whereas, on the other hand, if pus be present, it will so increase and exacerbate the pain that a diagnosis of the presence of this material can be made with assurance. He states as an example that, in cases of swelling of the knee associated with rheumatism or otherwise, we not infrequently are able to give great relief if the knee is put at rest with a fixation point and heat is actively employed. If by chance pus be present, the pain is augmented and becomes intolerable. Lewin states that he has employed heat for this purpose in a sufficient number of cases to make him feel confident that he cannot be mistaken in regard to this point, and cites ten cases of appendicitis in which the heat was applied for two hours by means of hot compresses and without the use of internal pain-relievers. Eight of these received this treatment with a good deal of relief, but the remaining two showed marked increase of pain.

Of the eight cases all went on to cure in the space of from five days to three weeks, while, on the contrary, the two which suffered an increase of pain after the application of heat required the administration of opium for the relief of pain, and both died.

Similar results were obtained by Sphor, of Frankfort-on-the-Main.

If further investigation show that this method of diagnosis is at all accurate, it is so simple in its application that it cannot fail to prove of value.—*Therapeutic Gazette*.

PERNICIOUS ANÆMIA CAUSED BY ORAL SEPSIS.—In reviewing a little brochure written by William Hunter, M.D., F.R.C.P., entitled "Oral Sepsis as the cause of Septic Gastritis," the *Therapeutic Gazette* makes the following comment:

"This is practically a reprint of an article which appeared in the *London Practitioner* of December, 1900, and is designed to spread the views held by Dr. Hunter as indicated in the title. He

believes, as some of our readers may perhaps know, that even certain cases of pernicious anæmia have their origin in oral sepsis, and it would seem exceedingly likely that filthiness about the mouth readily tends to produce general infection.

"While we are not able to agree with Dr. Hunter in many of the views which he advances, we think he has done a service in drawing attention to this important matter."

Current News.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

At the meeting of the National Association of Dental Examiners, held at Niagara Falls, July 28 to 31, 1902, the following officers were elected:

President, Charles A. Meeker, Newark, N. J.; Vice-President from the West, Burton Lee Thorpe, St. Louis, Mo.; Vice-President from the East, J. A. Libbey, Pittsburg, Pa.; Vice-President from the South, J. A. Hall, Collinsville, Ala.; Secretary, Joseph P. Root, Kansas City, Kan.

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EVOLUTION OF THE PULP.²

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It has often occurred to me that conditions other than the toxins producing lactic acid were instrumental in decay of the teeth. It and interstitial gingivitis result from a struggle for assimilable nutriment dependent upon the action of the nervous system operating through the law of economy of growth.

Elsewhere I have demonstrated the relation of degeneracy to the struggle for existence between the face and brain, the jaws and brain, the alveolar process, and the jaws and face. I shall now discuss degeneracy of the teeth and their pulps in relation to evolution.

In its evolution every structure in the body passes through

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the American Medical Association, Section on Stomatology, at Saratoga Springs, June, 1902. In this paper Dr. Talbot has made large use of Wiley's work on the *Amphioxus*, of Lyddeker, of Tomes, and other Comparative Anatomies.

³ Fellow of the Chicago Academy of Medicine.

embryologic phases resembling types found in the lower vertebrates. In such evolution it is affected beneficially by both degeneracy or the suppressive phase of evolution and the advance phase. These phases constitute a struggle for existence for assimilable nutriment which proceeds under the law of economy of growth. If this law of economy of growth proceed in a balanced manner, the structure type is developed, although not to the full extent promised in the child. In this development the contending influences of remote atavism, immediate atavism, type heredity, and immediate heredity all play a part. In the earlier phases of embryologic evolution remote atavism has seemingly most sway. For this reason structures appear early in embryonic life, only to disappear through the beneficial influence of type heredity aided by immediate atavism and by immediate heredity. Degeneracy at this phase hence plays a salutary part in causing disappearance of useless structures and in placing organs in shape for new functions. Nowhere is this process better illustrated than in the teeth and their pulps, whereby what was originally a placoid scale becomes a tooth intended for the utilization of nourishment. While the individual development of an organ, as DeMoor points out, is a compressed *résumé* of its historic evolution, still such a recapitulation must be only a more or less vague repetition of the essential phases of phylogeny. The development of the child, for example, exhibits "short cuts" and phases of direct development due to adaptation destroying the exactness of the parallel with phylogeny. The question, however, of these "short cuts" depends on the operation of the forces already described and the influence of the disappearance of rudimentary organs. It frequently happens that rudimentary organs are preserved on account of their insignificance alone. Thus occurs the persistence of accessory rudiments of enamel-organs in the development of teeth. Besides the rudiments of the enamel-organs for the milk teeth and the permanent teeth, there are additional organs present in a variable condition and number nearer the external surface. They are very generally present, and markedly resemble the youngest stage of the normal enamel-organs. According to Kollman and Gegenbauer, they are abortive rudiments surviving from an ancestral condition in which teeth were more numerous.

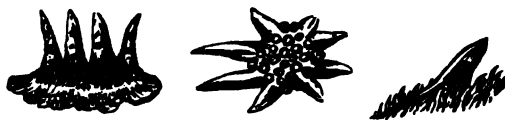
Development of the tooth from the placoid scale (Fig. 1) turns upon development of the mouth. In consequence of the increase in the size of the brain, its forward extension and its cranial flexure,

together with the relative reduction of the head cavities, the mouth, as Wiley remarks, has been carried round from its primitively dorsal position to its final position on the ventral side of the head in the craniate vertebrates. According to Dohrn, the verte-

FIG. 1.



Dermal papillæ of *Monacanthus toresulus*.



Dermal papillæ of *Monacanthus hippocrepis* (magn.)

brate mouth results from the fusion of two gill-slits. The annelid mouth which perforates the central nervous system in passing through the circumesophageal nerve-collar has become aborted and is replaced by a new mouth derived from a fusion across the mid-ventral line of a pair of gill-clefts. The hypophysis cerebri represents, according to Beard, the remains of the old annelid mouth. This double origin of the mouth has been particularly well shown in the embryos of the toad-fish by Cornelia Clapp. The toad-fish is, however, a comparatively high type. The mouth in vertebrates has undergone an evolution from a round (cyclostomous) to a jawed (gnathostomous) condition.

Development of the pulp illustrates clearly irregularities in type arising from the operation of the law of economy of growth as modified by environment and the consequent necessities of the animal. The pulp in some vertebrates becomes, as Tomes remarks, eventually converted into secondary dentine, but generally those teeth which exercise very active function and last throughout the life retain their pulp in an active and vascular condition. The variations in the condition of the pulp are by no means limited by zoölogic classes. For purposes of the present discussion the classifications of Huxley are most suitable. These include the ichthyopsidæ (which comprise the fish and batrachia), the sauropsidæ (reptiles and birds), the monotreme mammals, the marsupialia and mammalia proper. The

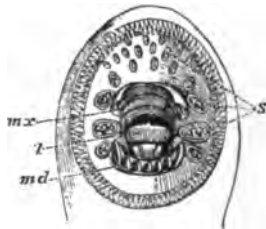
line of development of the tooth is shown in the more or less constant relationship between the skin and the teeth which appear as the scale above the ichthyopsidæ is reached. The law of economy of growth in the higher sauropsidæ peculiarly illustrates this. The lowest fish (the amphioxus) has no jaws and no teeth. In the next class, the lampreys have a cartilaginous skeleton and are cyclostomous (Fig. 2).¹ There are no jaws, and the mouth is surrounded by a circular lip beset with rows of small conical teeth.

FIG. 2.

Mouth of larva of *Petromyzon bronchiolus*.

The larger blade-shaped teeth are called the mandibular and maxillary teeth in the centre. These horny teeth, resting upon a slight dermal papilla, fit into special epidermal depression at the base of the papilla. In lampreys there are superimposed cones (Fig. 3). Each of these layers arises from a separate epidermal depression which goes on continually forming horn, so that the under cones are in no sense reserved teeth, for as each tooth is worn away at the apex fresh horny matter is formed below and pushed forward. There is thus no resemblance to most teeth of higher vertebrates. In young lampreys is found what at first sight seems a true tooth-

FIG. 3.

Mouth of *Petromyzon fluviatilis*: *mx*, maxillary tooth; *md*, mandibular tooth; *l*, lingual tooth; *s*, suctorial teeth.

sac, but the dental papilla never forms any odontoblasts, and the epithelium which corresponds to the enamel-organ produces horn. This is true of the marginal teeth, but farther in towards the centre the teeth are formed simply in the basal layers of the epithe-

¹ The following illustrations are taken from Günther.

lium, without the intervention of any sort of tooth-sac. In the myxine and bdellostoma of the same class are a large, sharply pointed medium tooth and two cone like teeth upon the tongue. The working surface of the teeth is composed of horn like that found in the lamprey.

The tooth of bdellostoma consists of a horn cap, thick, strong, and bright yellow. Beneath this is a layer of epithelium, and next a hard calcified material, which Beard regards as a form of dentine. The horny cap fits into an epithelial groove at its base, increases in length by the cells of this groove becoming cornified, and in thickness by a similar conversion of the epithelial layer beneath it. The hard cone forming the body of the teeth, while not closely corresponding to any known dentine, is undoubtedly the product of an odontoblast layer upon the pulp, which latter remains in the base of the dentine cone in the usual way. The relation which the horn cone bears to the dental papilla and its dentine is entirely different from that borne by the horny teeth of the ornithorynchus, in which the horny plate that takes the place of teeth in the adult lies beneath the teeth. In expressing this opinion, Tomes to some extent ignores the phenomena of evolution by atrophy, through which structures disappear by the law of economy of growth for the benefit of the organism. The third eye of man through the operation of this law becomes the pineal body. Through distant atavism and acquired defect gaining ascendancy, the type eyes sometimes atrophy for the benefit of the central eye, and a cyclops results. The same conditions occur in the evolution of the kidney in the human fœtus. Certain structures are formed only to disappear for the benefit of the type kidney. That the horny teeth and the teeth might have in this way independent origin does not seem to have occurred to Tomes or to Beard. Beard is of opinion that the fusion of the lingual teeth of myxine into a serrated plate may indicate the manner in which the serrated horny jaws have originated in turtles as a substitution for the true teeth upon which they were once superimposed. Tomes suggests that there is no material for this or the similar hypothesis of the origin of the bird's bill from the substitution of a number of coalescent horny teeth for true teeth. Since the horny beak of the cuttle-fish somewhat resembles the beak of birds, and since the cuttle-fish in many respects is of comparatively high development, it is by no means improbable that similar conditions were found in ancestors of the vertebrates.

The jaws, as Minot has pointed out, a later gain of the vertebrates, are absent in the amphioxus and lampreys and other cyclostoma. Man and the anthropoids retain more of this embryonic feature than many of the lower mammals.

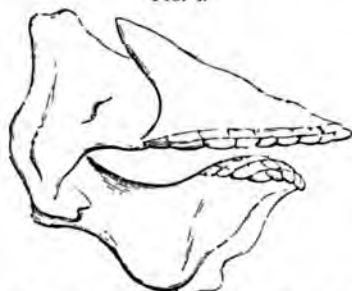
The mouth of the amphioxus is essentially an organ of the left side, homologous neither with the ascidians nor with the craniate mouth. The phenomena connected with the development of the mouth in the amphioxus throw light on the development of placoid scales in the interior of the body. In the sharks, the scales of other fish are replaced by a papilla which have somewhat the same structure as their teeth. To these the "shagreen" of the shark owes its roughness. The mouth is a transverse, more or less curved fissure opening upon the under surface of the head at some little distance behind the end of the snout. Hence a shark seizing its prey turns over upon its back or, at all events, upon its side.

The jaws (which are made upon the representatives of the palate,—quadrate arch and of Meckel's cartilage,—neither true maxillæ nor premaxillæ being present) are cartilaginous in the main, although covered with a more or less ossified crust, and therefore shrink and become distorted in drying. The shape of the jaws differs in the various groups. In some each jaw is tolerably semi-circular. In others they are nearly straight and parallel to one another. In all the rounded working surface of the jaw is clothed or incased by teeth arranged in parallel concentric rows. The teeth (which are situated upon the edge or exposed border of the jaw) are usually erect. The rows which lie behind them, farther within the mouth, point backward and are more or less recumbent, not having yet come into full use.

The teeth, as already shown, were primitively organs of the skin, widely developed over the surface of the body which played an important rôle in the genesis of the skeleton. Fish, especially sharks (Fig. 4), are hence the source of study of the primitive mode of tooth-formation. The tooth of the shark begins as a mesenchymal (body between the ectoderm and entoderm) papilla, composed of crowded cells and projecting into the epidermis. The layer of epidermal cells overlaying the papilla changes in character (its cells gradually lengthening into very long cylinders) and becomes the enamel-organ by further development, the epidermis thickens, the papilla projects into it, becoming narrow and longer, and, taking an oblique position, gradually assumes the shape of the

tooth. Ossification now begins over the surface of the papilla, a layer of epithelioid osteoblasts arises, and between these and the

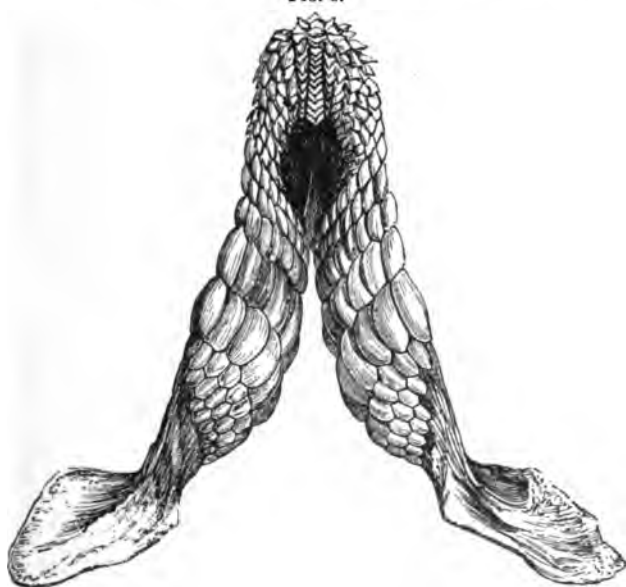
FIG. 4.



Jaws of Port Jackson shark, *Cestracion philippi*.

enamel-organ the development of bone or ivory begins. The osteoblasts persist, and the bony structure is developed between them and the epidermis, forming a stratum which grows in thickness (Fig. 5). At the same time the enamel-organ begins to deposit

FIG. 5.

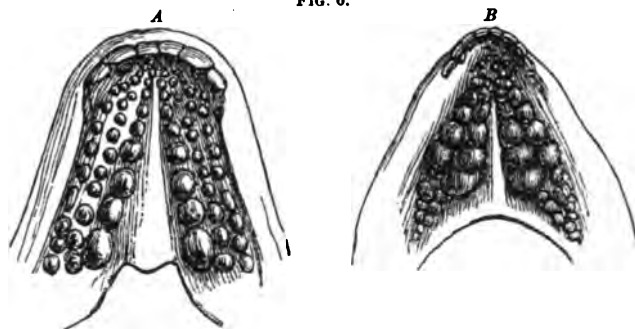


Upper jaw of Port Jackson shark, half natural size.

the calcified layer known as enamel over the papilla. Later the tooth acquires a support by the direct ossification of the connective

tissue at its base, and is then a complete "placoid scale." The teeth of the mouth depart from this primitive mode of development, since they do not arise on the surface, but deep down. The dentiferous epithelium grows down into the dermis, forming the oblique shelf, which is a special tooth-forming organ (Fig. 6). On the underside of the shelf the teeth are developed in the same way as

FIG. 6.



Sheep's-head, *Sargus ovis* of North America: A, upper jaw; B, lower jaw.

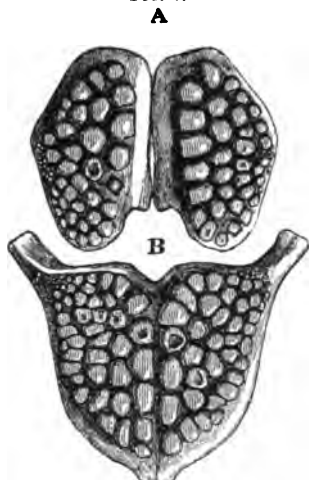
over the skin. A tooth is hence a papilla projecting into the epidermis, which, ossifying in a peculiar way, changes into ivory around the soft core or pulp. To the papilla the epidermis adds a layer of enamel. The tooth proper unites with a small plate of dermal bone at its base. By a modification of the jaws the epidermis first grows into the dermis, and then the dermal tooth papilla are developed. In the higher vertebrates teeth of the jaws alone develop in the modified way noted in the shark's jaw.

The pulp-cavity contains blood-vessels and nerves which enter through the opening in the root, and in the pulp cavity ramify over that delicate fibroid cellular structure, the pulp. This is continuous with an infantile number of small projections which extend into the tubes of dentine in the inner structure of the tooth. These tubules when fresh contain nerve and vascular processes from the pulp.

The use of the word pulp dates back, as L. C. Ingersol, of Keokuk, Iowa, points out, to the time when the teeth were considered bones, and when brain and bone-marrow were held to be the same tissue. The brain, as Ingersol states, might with equal propriety be called the cranial pulp, as the central organ of the tooth-structure the dental pulp. In Ingersol's opinion, dental ganglion is

more in keeping with its character and function. It is a vesicular or corpuscular ganglion, rather than a tubular or fibrilous one. The nerve-cells are multipolar, contributing nerve-force rather than acting as conductors of sensation. (Fig. 7.) The physiologic

FIG. 7.



Pharyngeal bones and teeth of *Pogonias chromis*, drum-fish.

relations of the peripheral dental plexus to the dental ganglia are most apparent in pathologic states. When an operator is working in the periphery of the dentine, the patient often insists that the instrument is in contact with the nerve. The pain is so intense and deep-seated as to be attributed to the central nerve. The converging nerve-fibres afford a direct connection with the dental ganglia. Pathologic conditions of the periphery are readily communicated to the nerve-centre. Dentists, according to Ingersoll, are so accustomed to associating fibrils of the odontoblasts with the dentine that they are apt to lose sight of their true character as prolongations of the pulp. The investigations of Tomes and others show that so-called dental fibrils are nerve-fibrils; that whatever else may surround them in the tubules, they contain at least a filament of nerve-tissue with characteristic nerve-functions. Sud-duth, while willing to admit that the fibrils perform the function of nerve-tissue, doubts whether true nerve-fibrils have ever been demonstrated. The dentinal fibrils arise from the odontoblasts, which are intimate in relation with the terminal fibrils of the main nerve-trunks of the pulp. The tooth-pulp, upon which surface the

odontoblasts lie, is composed, as Stowell¹ points out, of connective tissue, nucleated cells, blood-vessels, and nerves. The latter ends in non-medullated fibres, most numerous upon the peripheral portions of the pulp in juxtaposition with the odontoblastic layer, some of the fibres of which pass between the cells of the latter, from which it has been inferred that they accompany the dental fibres to their termini.

In batrachia, like the frog, teeth are wanting in the lower jaw. In the upper jaw they are found in two situations. Along the outer border within the lip there is a single row situated in a groove. They are also situated in a group on each vomer in the centre of the vault. The roots of the teeth possess large cavities, the walls being thin and almost of even thickness, except on the inner surface of the basal portion, where the wall is wanting, and so forms a large aperture to the root for the pulp. This, as Ecker has shown, is composed of connective tissue very rich in cellular elements. The cells next to the dentine are arranged in a layer, and resemble very much the appearance of a layer of columnar epithelium. The arrangement of the minute structures are not unlike those of the human pulp. The odontoblasts are spindle-shaped, and send processes (dental fibres) into the dentinal tubules. Blood-vessels are observed, but nerve-fibres have not been found.

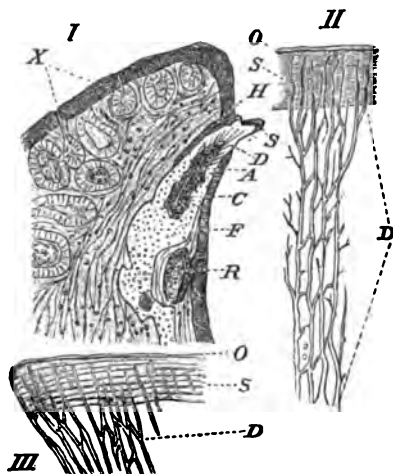
What is true of the frog in regard to large foramina in the teeth is also true of the sauropsidæ, like the alligator and some snakes (the python), etc. (Fig. 8.)

Many years ago Geoffrey St. Hilaire described a series of vascular pulps on the margin of the jaw of parrakeets about to be hatched, which, though destined to form a horny bill and not to be calcified into teeth, strikingly recall dental pulps. The famous fossil bird of the lithographic shale of Bavaria had a long jointed tail and possessed teeth. Up to the discovery of this bird toothed birds had been unknown. Later, however, Professor Marsh found nine genera and twenty species. They are referable to two widely different types. One group consists of comparatively small birds with great power of flight and having their teeth implanted in distinct sockets (odontotornæ, of which the genus *ichthyornis* is a type). The other group consists of very large swimming birds without wings, having teeth in grooves (odontocæ type, genus *hesperornis*).

¹ Sajous's Annual, vol. v.

In *ichthyornis* the teeth were about twenty-one in number in each ramus, sharp-pointed and recurved. The crowns were coated with enamel. The front and back edges were sharp, but not serrated. They were implanted in distinct though shallow sockets, and the maxillary teeth were a little larger than those opposing them.

FIG. 8.



I, Transverse section of the premaxillary bone to show attachment of the teeth (after Hertwig), $\times 22$; II, dentine and enamel, $\times 500$; III, enamel, $\times 500$; A, blood-vessel of the pulp-cavity; C, crusta petrosa; D, dentine; F, processus dentalis; H, layer of epithelium; O, tooth-cuticle; R, second tooth-germ; S, enamel; X, cutaneous glands.

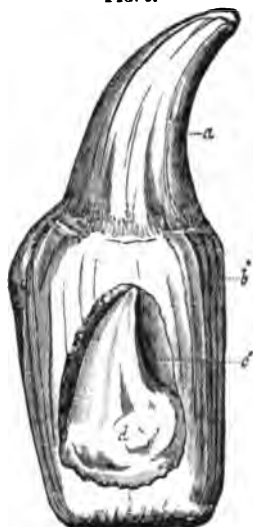
The premaxillaries were probably edentulous, and perhaps covered with a bony bill. In the lower jaw the largest teeth occur about the middle of the ramus, those at its posterior end being materially smaller, and the sockets are deeper and stronger than in the upper jaw. The succession takes place vertically.

The genus *hesperornis* (probably diving-birds) includes species six feet in length. The teeth are not implanted in distinct sockets, but lie in a continuous groove like those of the *ichthyosaurus*. The slight projection from the lateral walls indicates a partitioning off into sockets; nothing more than this is attained, and after the soft parts perish the teeth are easily displaced, and had often fallen out of the jaws. The premaxillary is edentulous, but the teeth extend quite to the anterior extremity of the lower jaw. In one specimen there are fourteen sockets in the maxillary bone and thirty-three in the corresponding lower ramus.

The successional tooth-germs were formed at the side of the

base of the old ones, and, causing absorption of the old roots, migrated into the excavations so formed, grew large, and ultimately expelled their predecessors. (Fig. 9.) In structure these teeth

FIG. 9.

Tooth of *Hesperornis regalis*, $\times 8$. (Marsh.)

consist of hard dentine invested with a rather thin layer of enamel, and have a large axil pulp-cavity. The basal portion of the roots consists of osteodentine. The junction of these surfaces is marked by a sharp ridge not serrated.

The monotremes, the lowest mammals that lay eggs, have a cloaca and are without nipples, the milk exuding from pores in the skin. The temperature is lower than that of other mammals. The echidna has a temperature of seventy-eight degrees. The skull is long and depressed; there is a large rounded brain-case with thin walls, as in birds. There are no true teeth in adult life. In the young ornithorhynchus are three flattened, saucer-like teeth, in each half of the jaw, which are afterwards shed and replaced by projections or cornules. The ornithorhynchus has a broad, flat rostrum, forked in front, which supports the beak and in which the teeth first and later the cornules are implanted. In the echidna the snout is long, narrow, and toothless, forming a long tube for lodgement of the tongue, as in the true ant-eater. In the proechidna the snout is nearly twice as long as the brain-case. The

palate of the echidna is covered with rows of horny spines, which scrape the ants off the tongue when it is drawn into the mouth. The ornithorhynchus muzzle resembles a duck's bill and is provided with the cornules that take the place of the true teeth. The upper teeth have broad-topped crowns with two long cusps on the inner edge and a crenated border along the outer edge, with many smaller cusps. On the lower this is reversed. They have low, broad crowns with short, stunted roots, which are for a time rather firmly held. They are on the top of the horny plates. The expanded crowns narrow rapidly at the neck and are surrounded by a very dense, thick epithelium, almost horny, that rises into a ring around them and dips underneath the expanded portion, so that the crown lies in a special cup of horny consistency.

This cup is not complete at the bottom, but the roots pass through it and fit depressions in the bone, which is perforated by the foramina for vessels and nerves. When the animal is about twelve inches long the teeth are shed, and then the horny cups grow in underneath and become complete. The curiously sculptured surface of the horny plates has its form determined by having formed the bed for a tooth with several roots. Although the horn grows underneath and fills up the holes for the roots to go through, yet the old form is maintained by the horny plate, which henceforth serves for mastication.

The horny plates are therefore not to be regarded as horny teeth, but are epithelial structures which take the place of the teeth. They are hence not closely homologous with the horny teeth of lampreys and myxincids. The true teeth consist of a body of dentine with a central pulp cavity capped with thin but hard enamel and implanted by short roots, the breadth of crown exceeding its vertical dimension. The enamel is of simple structure. The dentine is permeated by fine dentinal tubes beset with a number of interglobular spaces which in part masks the tubular structure of the crown. In the principal cusp large, apparently vascular canals exist. Towards the stunted roots a somewhat abrupt transition in structure takes place. All dentinal tubes disappear and large lacunæ appear. The roots are of softer, coarser material than the crown, which is itself not a high type of dentine structure. There are some resemblances between the root type of the ornithorhynchus and that of the hesperornis.

Among the marsupialia the dentition varies widely; this is

hardly surprising, since the marsupials are practically a distinct order of the mammalia containing representatives of the herbivora, carnivora, and insectivora of the other mammalia. The teeth are separable into different classes, but with the exception of the premolar, are not preceded by milk teeth. The wombats, who represent the rodentia among the marsupials, are the only ones which have rootless teeth and an equal number of incisors in each jaw. The incisors are large and cutting, with the enamel confined to their anterior surface. There are no cuspids.

Among the marsupials there is a vertical displacement and succession of the teeth except in the case of a single tooth on either side of each jaw, which is always the hindmost of the premolar series and is preceded by a tooth having the character of a true molar. This is the only one comparable to the milk-teeth of the higher mammalia; all the other teeth remain unchanged. This succession of teeth would indicate open pulps with large foramina in the roots of the teeth.

Among the mammals are forms which are absolutely edentate, have long scaly bodies and short legs, and look more like reptiles than mammals. The teeth when present are always composed of dentine and cement only (without enamel), and never form roots. In only one genus (*tatuania*) is there a functional milk dentition, one only (*dasypus*) possesses premaxillary teeth, and in none is there any definite division of those in the maxilla into cuspids, premolars, and molars.

The aardvarks have a very peculiar complex type of teeth, consisting of a very large number of separate parallel dental systems closely packed together. These teeth are preceded by a set of minute milk-teeth, mere remnants of a former functional set which show indications of a division into different groups such as premolars and molars.

The armadillos have thick plates of ossified skin covering the body. In all the group teeth are present, generally twenty-eight to thirty-eight in number, but in the giant armadillo amounting to eighty to one hundred. These teeth are small and simple with single roots.

Passing upward from the papilla which forms the tooth of the placoid scale type the relations of the pulp as regards persistence and inclosure vary widely. Permanent pulps are found quite high in the mammalia. The mastodon has permanent pulps

which continue to grow and are partly coated with enamel. In this particular they resemble the rodents as well as in the absence of cuspids. There are toothed whales, or odontoceti, and baleen whales, or mystacoceti. The odontoceti have no whalebone, but always possess teeth which are generally numerous, although sometimes few and quite rudimentary in size and function. The narwhal has the most extraordinary dentition of any mammal. It has only two teeth in the adult state, both of which lie horizontally in the upper jaw. In the female these remain permanently concealed within the bones of the jaw, so that this sex is practically toothless; but in the male, while the right tooth remains similarly concealed and abortive (as shown in the skeleton by removal of part of the bone which covered it), the left is immensely developed, attaining a length equal to more than half that of the entire animal, projecting horizontally from the head in the form of a cylindrical or slightly tapering pointed tusk, with the surface marked by spiral grooves and ridges.

Although the so-called "whalebone whales" (mystacoceti) have rudimentary teeth developed at an early period of life, these soon disappear, and their places are occupied in the upper jaw by the baleen, or "whalebone."

Baleen, or whalebone, resembles in development the cornules of the ornithorhynchus. Each plate is developed from a vascular persistent pulp, which sends out numerous long thread-like processes that penetrate far into the hard substance of the palate. Each hair-like fibre has within its base a vascular filament or papillæ, and, in fact, is nothing but an accumulation of epidermic cells concentrically arranged around a vascular papilla, the latter being enormously elongated. The baleen plate is composed mainly of these fibres, which constitute the hairs of its frayed-out edge. In addition to this, layers of flat cells bind the whole together and constitute the outer or lamellar portion. The whalebone matrix produced by cornification of the epithelial coverings of papillæ is an epithelial epiblastic structure morphologically, corresponding not with dentine, but with the enamel. The whole whalebone plate and the vascular ridge and papillæ which form it are comparable to the strong ridges upon the plates of certain herbivora. Study of the mouth of young whales prior to the cornification of the whalebone tends to demonstrate this. This is obviously a return to the placoid scale type carried into the interior by the mouth

changes. The development recalls that of the spines on the palate of the echidna.

Manatee teeth have peculiarities unusual in mammalia. The dentine of the hard unvascular variety is permeated by a system of larger or vascular canals, arranged with much irregularity and most abundant near to the periphery of the dentine, where they communicated with one another. The dentinal tubes do not radiate from these vascular canals. There is an ordinary unvascular dentine with a system of capillary conveying channels inside it. These capillary channels are no longer previous, having become obliterated and presenting the appearance of greatly elongated interglobular spaces. The cuspids among the bunodonts (swine and hippopotami) are partially or wholly devoid of enamel, and grow from persistent pulps. The incisors also in the hippopotami grow from persistent pulps as in rodentia. While the hyrax, or coney, and the rhinoceros have similar molars, the first resembles the rodents in dentition, because of the larger size of its central incisors, which grow from persistent pulps, are chisel-edged, prismatic in section, and furnished with a thick coat of enamel on their antero-external and antero-internal faces. The second pair of incisors, which is small, is soon lost. There are the full typical number of premolars and molars, and the patterns of these teeth closely resemble those of the rhinoceros. In the lower jaw the middle incisors are small and the outer ones largely developed, and all persist. Their crowns are trilobed and pass in ordinary closure of the mouth behind the upper incisors, where they are met by a dense pad of gum, but they are not of persistent growth.

The rodentia are characterized by want of cuspid teeth and by peculiar structure and great development of their incisors. The majority have but a single pair of incisors above and below. These teeth are large, curved, and adapted to gnawing purposes by sharp chisel-like edges formed by the hard outer coat of enamel, restricted to their front surfaces, and wearing more slowly than the softer dentine or tooth-core. These teeth during life grow from their roots as fast as they wear down at their tips. Should one be destroyed or diseased, the corresponding tooth in the opposite jaw, which ought to have been worn down by it, continues to grow until it may even bring about the death of the animal by preventing the mouth from closing, and thus cause starvation, or by curving over enter the back of the head.

An extinct order, *tillodontia*, seems to combine characters of several distinct groups,—*carnivora*, *ungulate*, and *rodentia*. The *tillotherium* skull (Marsh, the type skull of the order) has the same general form as the bear, but in structure resembles the *ungulata*. The molars are of *ungulate* type, the cuspids are small, and in each jaw there is a pair of large scapriiform incisors faced with enamel and growing from persistent pulps, as in rodents. The second pair of incisors is small and has not persistent pulps.

The *insectivora* have small brains and small faces. Some approximate the *rodentia* and others the *lemurs*. The *galeopithecus*, which was formerly placed with the *lemurs*, forms one group. The other *insectivora* are divided into two groups by the pattern of the molars. The majority present a W-pattern, while the others have narrower molars with a V-pattern.

The *insectivorous* bats have small incisors, rather large cuspids, and molars which present the W-pattern.

The *lemurs* usually have the upper incisors very small and widely separated from each other. In the *cheiromys* the incisors form a single pair of large curved teeth growing from persistent pulps and wearing obliquely, so as to constantly preserve a sharp cutting edge. The enamel is very much less thick, yet not altogether absent upon the backs of the upper incisors. The lower incisors are very narrow from side to side, and very thick from back to front, and are composed very largely of enamel, the dentine constituting but a small part. After considerable interval, which is devoid of teeth, there follow four upper and three lower teeth, which are not of persistent growth, but have definite roots and resemble the molars of many omnivorous rodents.

The *simidæ*, or true monkeys, are divided into the new- and old-world monkeys. The new-world monkeys are divided into the *marmosets* and *cebidæ*. The *marmosets* have only thirty-two teeth, unlike the others, which have thirty-six. They have three premolars on each side. The old-world monkeys have the same dental formula as man. The *anthropoid* apes resemble man in their dentition. The *simiadæ* and *anthropoidæ* (except a generalized type found by Ameghine in the tertiary of Paraguay, which has rodent, *insectivora*, and *ungulate* features) are identical as to pulp with man.

CONCLUSIONS.

In each order up to the primates occurs a difference in the size of the dental foramina, showing a struggle for existence between the organs.

In the evolution of the pulp from the placoid scales the pulps are often many times larger than the scale. Sauropsidan pulps are generally as large and sometimes larger than the tooth.

Shark teeth from their groove type have large pulps. The rooted part of each tooth is greater than the exposed, and is hinged. The early teeth are formed in grooves in place of sockets.

The formation of projections in the grooves of toothed birds and in some mammals show where change from open sockets to closed foramina of the teeth occur.

The variations which reduce the toothless birds, the ornithorhynchus, and the baleen whale to lower dental types indicate that degeneracy in an organ which is for the temporary benefit of the type as a whole. The persistency of open pulps at the expense of the tooth as a complete type is an indication in the same direction. The relation between the dermis and the teeth as shown in pangolins, armadillos, hairy men and men with horny teeth, hairless dogs, etc., continues quite high in the scale, and is still to be reckoned with as a factor in pulp evolution. When the dental blood-supply is cut off and nourishment ceases, from the closing of the foramina in man and some lower vertebrates, teeth virtually become foreign bodies.

Decay is therefore a natural process of excretion. When the teeth become foreign bodies, blood-vessels approach but cannot enter them, hence they are blank walls where circulation ceases. The alveolar processes, therefore, are easily absorbed through metabolic change causing interstitial gingivitis.

Since blood does not reach the enamel and dentine, and nutrition is cut off, tooth decay is controlled by the trophic nervous system. The pulp is hence still a transitory structure in human evolution, and hence one on which nervous and metabolic storm and stress exerts a strong play.

RÉSUMÉ OF THE HISTOLOGY OF THE DENTAL PULP.¹

BY V. A. LATHAM, M.D., D.D.S., F.R.M.S.

THE consideration of the details of development and structure from a new point of view, I regret to say, is too incomplete, and my opportunities have been too few, to allow of the experimental work being completed in time for this meeting. I can only bring to your notice a number of what seem to me to be important questions bearing upon this subject for your discussion.

When we consider the literature at our command, we feel inclined to ask, Is this reliable? Can we prove these statements? And when we commence our line of proof by experiments, we meet with many obstacles. First, we find our education as regards our microscopic work has been neglected in college, or only given us from one side,—the medical, with no dental bearing at all. What student is taught the principles of optics, illumination, and the use of the condenser, which are so important in this work, when we must differentiate and explain what we see, so as not to give false interpretations? It is often said, "We don't need any such work; we shall not ever use it." And very little interest is shown by the student, because such ideas are presented. Take away the microscope from our profession, and we take away almost all the greatest work, as, for example, the studies of Boll, Sir J. Tomes, Charles Tomes, Legros, Magitot, Leber, Rottenstein, Kölliker, Waldeyer, Von Ebner, Retzius, Mummery, Miller, Miles and Underwood, Michaels, Choquet, Vignal, Gallippe, Huxley, Klein, Charteris White, Paul, Goodsir, Caush, Williams, Goodby, Hopewell Smith, Andrews, G. V. Black, Schaefer, Spec, Sudduth, Bödecker, Broomell, Paris, Arkövy, Vincentini, Wedl, Weil, Morgenstern, Walkoff, Römer, Neumann, Röse, Raschkow.

Only recently Dr. Walkoff has disclaimed Williams's idea of the cement substance being present in enamel, and says that the rods are actually in contact. Why is this? Because of the difference due to micro-training, and the correct interpretation of images.

¹ Read before the American Medical Association, Section on Stomatology, at Saratoga Springs, June, 1902.

Dr. Walkoff says the cement-substance theory is due to inaccurate focussing and to the use of objectives having too low a numerical aperture. Hence we see the reasons why our older men studied optics, illumination, and diatom structure, requiring the highest acme of skill, not only to produce the picture, but to interpret the same. One observer may describe hexagonals, another dots, a third clear space and lines,—all in the same field. Who is right?

It is a matter of some pleasure to note that Dr. J. L. Williams has gone so far as to urge the study of the lower forms of life, with a definite object in view. This has been my own desire for many years, and I have always tried to give a few hours to the subject, together with lantern slides and mounted specimens. Our dental students should be taught this subject, and by a teacher who is broad enough to show the close relations of science, medicine, and dentistry. Unfortunately the pressure of manual work is so great that the students seem only too glad to put their microscopic science branches into the smallest limit of time, and they demand the most rapid methods of work; and I am sorry to say it is here the division of sentiments occurs in our professional schools. One set of teachers urge such work as being of little value compared to the operative, prosthetic methods, but they will confine a class of students to a four or six weeks' course on natural tooth forms.

Students classify themselves into many degrees and we are expected to suit them all.

First comes the industrious one, who, if given the scheme and slides, aids himself.

Secondly, the average man, who expects his teachers to give him the cream of all the work ready to digest, and to stand at his elbow all the time.

Again, the slow, dull fellow, who desires constant repetition.

Lastly, the lazy man, who cares for no one's comfort or even his own progress.

There are also difficulties inherent in the subject itself. Take, for example, the study of the physiologic resorption of the deciduous teeth, where the pulp retains its vitality. And here we may ask where is the study of the physiology of our dental structures similar to those given the medical student concerning the action of the stomach, liver and intestines? Physiologic teaching of a nature to call forth any vital interest is at a very low state in the majority of the schools in this country, and it is a detriment to both medical

and dental practitioners, as they both work in the field of clinical medicine as well as in the anatomic and surgic.

To return to our pulp. As soon as the so-called absorbent organ reaches the pulp it causes the latter to undergo a change at the point of contact. It is probably during the time required for this change to be effected that the dentine immediately surrounding the tooth-pulp remains safe from dissolution; but once the change sets in, the part of the pulp near by joins in the general attack upon the tooth; *i.e.*, the pulp becomes an absorbent organ, alternately resorbing and laying down new tissue which closely resembles cementum in all details except the lamellar structure of the latter. If the pulp dies the natural process is arrested; roots do not absorb, but remain to obstruct the eruption of the advancing teeth, in some causing alveolar abscess and in others irregularity. This is borne out, as first described by Dr. Theodore Stack, by the faceting of the ends of the roots of the deciduous teeth by the crowns of their permanent successors. Tomes says, "When resorption has progressed so far that only a small part of the crown remains, the enamel is likewise involved, and resorption indentations make their appearance in it also." He has seen, both in animals and in men, many pulps taking on a diseased action, sometimes on account of caries approaching, and sometimes the pulp eating away the walls of its own chamber. Then after a time that process of destruction is stopped and the giant-cells of absorption themselves are calcified.

Another question: How near to the pulp do the micro-organisms in dentine penetrate? So far that more than eighty per cent. are sacrificed. Almost all pulpless teeth are infected, and so give abscesses later. Even the smallest superficial cavity shows the deep penetration and the symptoms of pulp irritation. The extreme difficulty of removing the ultimate fragment of a pulp seems to me worth noting, from a histologic, pathologic, and bacteriologic point of view. That it is difficult is borne out by attempting to pull out a pulp from a tooth that has been cracked open; at the apex of the root the pulp will be found especially adherent. Are these attachments nervous, vascular, or connective tissue? This point has a practical bearing in operative dentistry. In reading papers on treatment of pulps, one sees the statement, "Of the difficulty in removing the colloid material at the very apex when trying to empty cavities, and the difficulty to find any agent that will do

it." What this is I am not prepared to say, and I think some pathologic work might inform us of the nature of this material.

If an organism is bathed in its own juice, it ceases to live. The cultivations made at the present time to produce the various serums for dealing with diseases of various kinds are, I believe, based upon that fact. In *dead* teeth a simple extrusion from the alveolus is seen; in *living* teeth, a growth of the alveolar ridge, which is dependent on the live pulp. The wasting of the ridge after removal of teeth is due to *extraction of the dental pulp*, as well as to the local damage caused by removal of the tooth itself; indeed, it may be fairly maintained that the results of the tooth extraction scarcely equal those due to the loss of functional activity of the pulp; for the pulp influences in a marked degree the nutrition of the alveolus and its process,—a *trophic function*. The loss of the pulp may cause a disturbance of the vasomotor equilibrium, in the direction of a paralysis of the vasoconstrictor mechanism, similar to that seen in the familiar experiment upon the rabbit's ear, when section of the sympathetic causes vascular dilatation. The peridental membrane is congested, owing to a loss of resiliency in its blood-vessels,—a condition very likely to cause stasis and so account for the change that takes place in the surrounding alveolar process. If the pulps are removed from deciduous teeth, strictly speaking, resorption does not take place, but, like the change affecting dead permanent teeth, the process is *pathologic*, not physiologic, and is much more slowly accomplished than normally. This is one of the reasons why we see the roots of dead temporary teeth coming through the alveolar margins and causing ulceration of the cheeks and lips. (See Tomes's "Dental Anatomy," page 129.) Gingivitis and alveolitis may be a sequel to degeneration of the tooth-pulps and the sensitiveness of the teeth on the periphery in pyorrhœa alveolaris, which we can compare to the corneal reflex. Hence we must get our micro-workers to demonstrate direct nerve connection between the peridental membrane and the so-called odontoblasts. We should have credited these with a vasomotor function, for, situated as they are at the very periphery of the pulp, closely joining the dentine, it can hardly be doubted they must be peculiarly susceptible to even minute variations in the blood-pressure. We must prove the odontoblast cells part of the sympathetic nervous system. Cases have been recorded where an exposed pulp struck by the forceps in extracting, or by a probe, has caused a tonic cramp of the flexor

muscles of all the fingers of both hands; in one case the left hand was closed so tightly the patient could not open it and the flexibility of the arms was affected.

Another reason why the pulp should be more thoroughly studied lies in the fact that it is so often diseased. Kay, Magitot, and others report an examination of more than ten thousand teeth; in these, one thousand showed that 18.1 per cent. were affected with pulpitis.

Again, we sometimes forget the strain the pulp is put to; and we must remember that though the teeth are the chief mechanical agents in digestion, they also subserve other functions,—namely:

- (a) Locomotion (walrus).
- (b) Speech (man).
- (c) Digging for food (indirectly aiding digestion).
- (d) Combat (narwhal, wild boar, tiger).
- (e) Anchorage (dinotherium).
- (f) Transportation of things useful to the animal (beaver, elephant).

Thus our comparative anatomy must also be looked into to show the varieties of pulps, their location and function, before we can accept our present views. Professor Röse has been doing excellent work in this line.

In considering the structure of the pulp it is almost impossible to avoid discussing the dentine and enamel, as they are closely united in function and type. Huxley says, "Neither the capsule nor the enamel-organ takes any share in the development of the dental tissues, all three of them—viz., enamel, dentine, and cement—being formed beneath the membrana præformativa, or basement membrane of the pulps."

We are told the epiblast forms the mucous membrane of the body, and in conjunction with it the mesoblast, also the foundation of the pulps, but the true mucous membrane (mesoblast) does not develop till the forty-fifth day of gestation, and is in a stage of evolution, whilst the epiblast cells are completely developed. All cells start alike, but whence this specialization few, if any, have determined. Teeth are, from a morphologic point, the most interesting structures in the oral cavity. Their development in man and mammals is neither simple nor easily intelligible; in the lower animals we find it the simplest. The teeth are originally nothing else than ossified papillæ of the skin and the mucous membrane.

(Compare the development of Selachean's teeth; here we see a simple development of the dental pulp and enamel germ.) The earliest activity is seen about the sixth week of foetal life,—different periods in different animals. The enamel-pulp, or stratum intermedium, is seen at the eighth week, but most highly developed about the fifth or sixth month, then diminishes in size up to the time of birth. The dentine bulb appears about the sixth week and becomes conical about the ninth week, when the dental sac of the future follicle shows. Calcification of dentine begins about the sixteenth week of foetal life. About the eighteenth week the sacs of the primitive dental follicles are closed. The salivary glands are found in the second month. First appears the sub-maxillary gland, in the human at the sixth week. (Chievitz.) Then the parotid, at the eighth week. Finally the sublingual. (Hertwig.)

We all know the epithelial cord (Fig. 1) is epiblastic, and dipping down from the lowest point processes or buds push out. Their growth seems to stimulate the tissue beneath to form little islands which the epithelium envelops, similar to the index finger being forced into a soft ball, and so giving us the illustration known as "the Florence flask stage" (Fig. 2), the under part of the flask being occupied by the subepithelial mass. The flask is also full of epithelium, columnar in variety. The little mass isolated everywhere but at its base is known as the "dentine germ," and sometimes, because of its shape given by its isolation, the dentinal papilla and dentine bulb and its substance is gradually transformed by a series of changes into dentine, enamel, and pulp-tissue. All structures are chiefly composed of cells, but those cells on the periphery of each, next to the basement membrane, are especially to be noted, being elongated, well-marked, and columnar. The pulp germs (dentine germs) are also cells; the outermost just beneath the basement membrane are also specially formed. In or around them (opinions differ as to which) the substance called dentine is formed, afterwards calcified. The cells immediately underlying them are intermediary, and possibly reinforce them when their energy is spent. One question seems to come here: Why should the pulp-organ not receive its own designation rather than that of the dentine? Is the dentine more important, or is it merely due to the fact that workers were surprised at the specially large peripheral cells, and undertook to study these more minutely and so found the origin

FIG. 1.



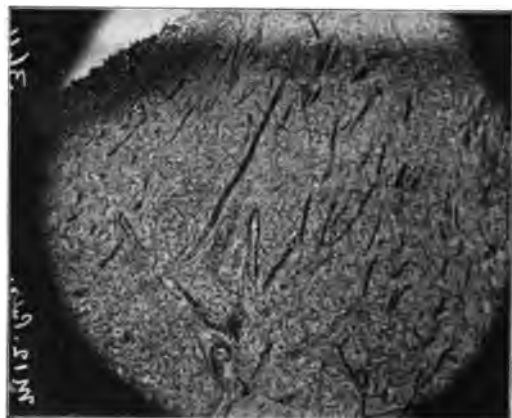
Developing tooth-pulp. S. reticulum and early calcification.

FIG. 2.



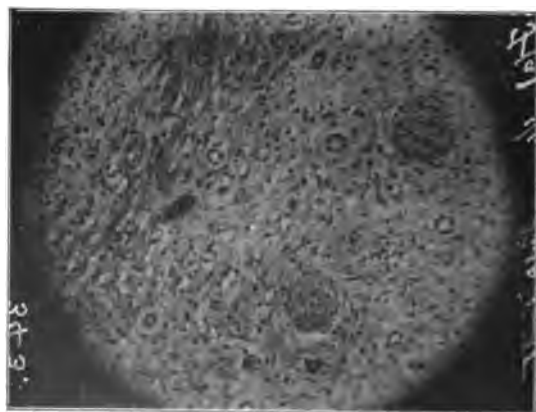
Flask-stage of formative papilla. Invagination of enamel-organ.

FIG. 3.



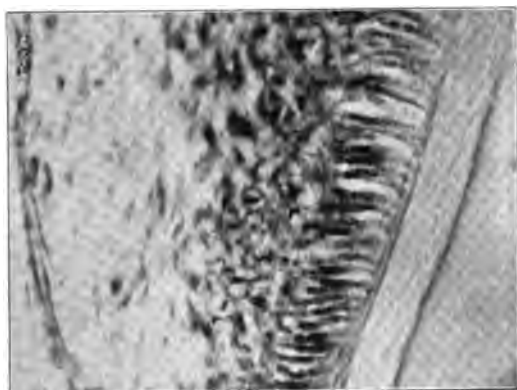
L. S. pulp. Blood-vessels and nerves.

FIG. 4.



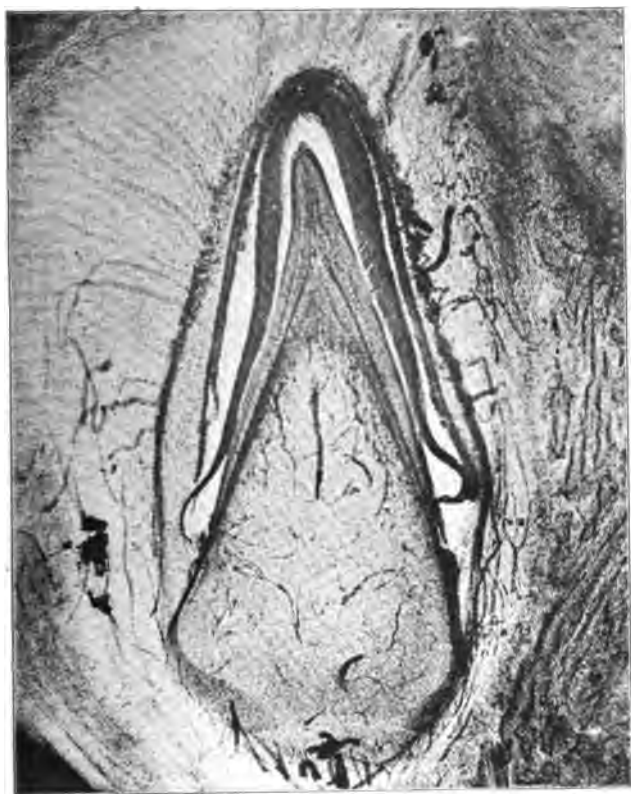
T. S. pulp. Nerve-fibres and blood-vessels.

FIG. 5.



L. S. pulp. Odontoblasts and blood-vessels.

FIG. 6.



Vascularity of enamel-organ and pulp, etc.

FIG. 7.



Vasomotor nerve-supply of pulp. (Special stain.)

of the dentine? It seems a mistake to have so named it, for its *special* significance and function is lost and we had better still regard the island as a "formative papilla" till the various individual structures are well marked, and then continue its name of pulp if still so desired. This name is a questionable one, and indicates more of an embryonal stage than a highly specialized organ. Legros and Magitot state: "From the external surface of the dermis (mucous membrane) arises the dentine bulb or dentinal papilla. Some authors state that the papilla arises in the submucous tissue, but to me it is evidently from the dermis" (page 26). I believe it was the late Dr. M. S. Dean who advocated before the American Dental Association in 1878 that the dentinal papilla is induced. If this be true the origin of a supernumerary dentine papilla is readily accounted for. This follows, and accepts Dr. Magitot's theory, "*That the enamel-organ determines the form and character of the future tooth.*" Dursy according to Waldeyer speaks of the semilunar area of tissue extending along each half of the jaw and from which the dentine germs are developed. They project against the enamel-germs while the remainder atrophies. The two horns of the semilunar mass extend from the base of the papilla some distance up and embrace the enamel-organ and dentine germ."

Dr. Andrews, in Kirk's "American Text-book of Operative Dentistry," says, "While the central cells of the enamel-organ are changing, the dentine germ is assuming the form of the future tooth-point," and this seems to be opposed to Magitot's theory. The more work done leads me to accept this, rather than to give the enamel-organ the credit. If we consider the origin, certainly epiblastic cells are first formed, and consequently are older and first in the field, but a section shows we also have the hypo- and mesoblastic cells present; and looking at one of the earliest stages we can obtain, evidence is found that the mesoblastic structures are working as well as the epiblastic, though not quite in so well marked a form. Can the epithelial cord grow without vascular aid? Even if well-defined blood-vessels are not present, we have a secretive or plasmatic osmosis passing through the embryonal cells, and very fine arteries or capillaries (Figs. 3, 4, 5, and 6) in our deeper structures. We are told in Legros and Magitot, the earliest dentine papilla contain vascular canals, but Robin and Magitot both deny the presence of nerve-fibres; if circulatory vessels are present we *must have nerves* to control these vessels, and by careful preparation

I find them in sections, some about the eleventh week. (Fig 6.) Another statement. At no time during the development of the tissues do the dentinal papilla and enamel-organ become united. (Figs. 8 and 10.) Sudduth confirms. Legros and Magitot state that no vessels and nerve-fibres have ever been demonstrated as passing from one to the other. (Fig. 8.) Bödecker disagrees, saying that when we detach the enamel-organ from the dentinal papilla there appears upon the outer surface a delicate fringe which he believes to be the true connection between the enamel-organ and the dentinal papilla. A distinctly marked line is often seen separating the ameloblasts from the odontoblasts, just before the beginning of dentine formation. Later, when the formative cells of the two tissues are separated by a considerable thickness of dentine, we may see a membrane-like structure covering the odontoblasts which appears identical with that bordering the inner ends of the ameloblasts. This seems to suggest that there is an original basement membrane separating the tissues from which these different cells originate, and just before commencing to form the dentine it separates and remains as a covering for both amelo- and odontoblasts. (Williams, J. L., *Dental Cosmos*, 1896, page 113.)

This statement should be used with a microscopic examination, and here we must outline our layers of tissues. If we consider the bulb as a formative organ,—the pulp,—add our specialized cells, the odontoblasts, whose character is that of a new histologic chemic structure with a set function,—i.e., formation of dentine,—to these cells and their membrane, ought we only to apply the term dentine germ or organ when it is a complex structure with complex functions? We have created a special title for the ameloblasts whose analogue is the odontoblast, and in the term enamel-organ we must not forget we include other tissues,—namely:

- | | |
|---|-----------------|
| (a) External epithelium (Nasmyth's membrane, Waldeyer). | } Enamel-organ. |
| (b) Stellate reticulum. | |
| (c) Stratum intermedium (enamel pulp). | |
| (d) Basement Membrane. | |
| (e) Ameloblasts (internal epithelium). | |

If we use this term, we must understand we mean all the layers. The cells of the stellate reticulum are a modified form of those composing the middle layer of the oral epithelium. (Sudduth, Wil-

FIG. 8.



Dentine and enamel-organ joined.

FIG. 9.



Shows dental follicle, or sacculus, and dentine and enamel layers united.

FIG. 10.



Pulp, dentine, and enamel, with Tomes's fibres and stratum reticulum. $\times 1000$.

liams.) The enamel-organ is vascular. (Beale, Howes, Poulton, Williams; but Wedl, Magitot, and Legros deny it.)

To go back, what did these authors mean in the term dentine papilla and enamel-organ, and by stating they were not united? These show they are united (Figs. 8 and 9); but if we mean the ameloblasts are not united to the true bulb, we may find it yet unproved unless we agree that the odontoblast fibres run through the formed dentine and unite with the Tomes fibres (Fig. 10.) Again I find that we have the tissues in contact, but only in certain stages of development, and a variation occurs in studying different animals.

The formative organ consists of many mesoblastic cells, and is analogous to the enamel-organ, so called. At a very early stage (six weeks) we can notice under the epithelial cord a faint aggregation of cells which appear deeply stained, showing active proliferations like a spot of round-celled infiltration in an inflammatory area. Gradually a stroma-like outline appears, as if it were going to wrap around the epithelial cord, with a dark area at the centre of the base which soon becomes semilunar in shape. (Fig. 2.) Now the lateral areas absorb, whilst the central area rises and builds up a papilla, many densely packed cells, so much so that they cannot assume any definite shape as do the cells of the stellate reticulum, yet leaving below room for the stroma of connective tissue, and a special fibrous matrix of delicate, wavy fibres derived from the cells, as seen *only* if the staining has been especially done, vessels which even pass among the odontoblasts and nerves or plexus. This compares with the enamel-organ where we have nothing but cells and intercellular substance. This difference, of course, we can foresee when we consider the origin of the two organs. The one is epithelial, a mere dipping down of the epidermis; the other, derived from mesoblast or subepithelial (true dermal) layer, and so shares its structural changes and marked functions. An apt illustration may make this clear. We have two armies contending for victory standing face to face. The front rank of each army—the enamel-organ—composed of its best,—the special cells, ameloblasts. The other, the fine large odontoblasts; behind these respectively stand ready to step into place when needed the cells of the stratum intermedium and the layer behind the formative odontoblasts, while the centre of each host is formed of reserves. (Figs. 11 and 21.)

Now, suppose each army is contesting the ground, not by fighting, but by tactics. Earthworks are thrown up, and as each side

increases the thickness of his fortifications, so the distance between the combatants increases until the ameloblastic army has used up all its reserves, and being cut off from supplies, the remnant perish, leaving nothing but their outwork standing.

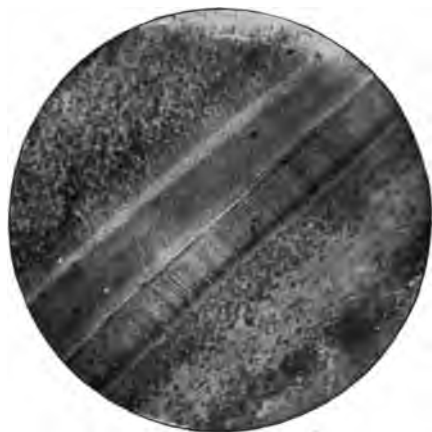
During these manœuvres the dentine army, pleased with a substantial fort (throughout which every care was used to keep their complete system of telegraphic operations), in no trouble for a base of supplies and reinforcements, at last stands at ease.

Their front rank men are tried veterans now, stiffened by disuse as the years go on, nearly forgetting their building powers once so quickly done. Caries may try to steal in and destroy their ram-parts; then must they begin to wake up and repair, but slowly, clumsily at first, better as they progress to form secondary dentine and so protect and strengthen the point of attack. If not alarmed by the sentry early enough a breach is effected, the enemy (bacterial) pours in. But here we enter a new field of devastation and despair,—pathology.

The odontoblasts, the true dentinal germ, and collectively making perhaps the *membrana eboris* of some authors, vary in shape. The ends near the new dentine are wider than the inner part. Artefacts may and do occur in our manipulation, but we may find cells varying in shape from a banana to a pear, and the old cells are shorter than the active workers. Underwood says, "The cells which commence the work of dentine formation are thought to be smaller than those which complete it, and this Mr. Hopewell Smith suggests as an explanation of the greater caliber of the fibrils at the pulp end." A view held by Mr. Underwood as more acceptable than the more widely-received one, that, as the dentine grows older, the fibril becomes converted into sheath, the sheath into matrix; but this belongs to the field of calcification. (Fig. 13.) The origin of dentine formation is hardly belonging here, except as we include the special function of the odontoblasts in with the *formative* papilla under the head of dentine germ. Briefly, as so much is not yet proved and the subject comes under calcification, we all agree that the formation of dentine is due to active cell proliferation. It must be borne in mind that the tissue is formed before it is calcified, and it is easy to show a layer of formed, but as yet uncalcified, dentine, separating the cells from the completed dentine. We note the chief ideas regarding the functions of the odontoblasts.

First.—Mr. Tomes's views are generally received. That each

FIG. 11.



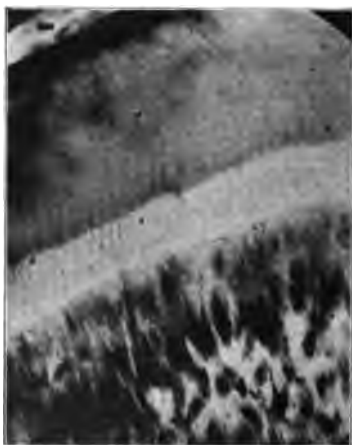
Ameloblasts (beaded), dentine pulp, and odontoblasts.

FIG. 12.



Pulp, odontoblasts, ameloblasts, and matrix. $\times 1000$.

FIG. 13.



Dentine odontoblasts, calcoglobulin.

FIG. 14.



Developed tooth with glands of Serres, *in situ*.

odontoblast converts into dentine by calcification of its outer part, the axis cylinder remains soft as the fibril, and between the two is a semicalcified layer or sheath of Neumann. The subsequent fusion of the conjoining cells shows no line of demarcation, a homogeneous matrix, while the fibrils remain connected with the formative cells.

Second.—Klein considers odontoblasts form the matrix, the cells below the fibrils which pass between the odontoblasts. This view also requires a fusion of cells.

Third.—Magitot regards the homogeneous substance as the seat of formation of the matrix which is calcified around the soft parts, the fibril remaining connected with the cell, just as the contents of the lacunæ and canaliculi of bone remain in the calcified matrix. Here we note that no part of the cells is converted into matrix. For some reasons Magitot's theory seems more reasonable and built on a basis with bone and cementum. If the enamel-organ is the formative builder of the tooth, why does the dentine begin to calcify at the tip or within its substance first, even though the enamel is formed earlier?

The pulp fibres are the origin of the dentinal basis substance. (Purkinje and Raschkow.)

Schwann believes the pulp produces an ossified substance, and calls it dentine.

Baume says, "The odontoblasts secrete a material which calcifies, rather than that they are themselves converted."

Waldeyer says the central remains of the odontoblasts are found as the dentinal fibres.

Morgenstern thinks the pulp transudes a substance which contains salts of lime without odontoblastic aid, which is taken up by them, accumulates, and passes out of the peripheral border.

"The *first layer of cells formed* on the pulp surface beneath the ameloblasts are *not* odontoblasts, but develop into fibres, and on the actual surface these fibres blend together and form a membrane which lies just beneath the ameloblasts." (Paul.)

When dentine is forming, Mr. Mummery (1891) showed the appearance of connective fibres in advance of the line of calcification. In young teeth a reticulum of fibres was seen passing between and enveloping the odontoblasts. They seem to originate from the connective tissue in the formative pulp near the odontoblast layer, and are evidently the foundation of the dentinal matrix, so the lime can be deposited like cartilage matrix to bone.

From a comparative study we must remember the same pulp may make many varieties of dentine, and we will use Mr. Chas. Tomes's table as a reminder.

A. Dentine developed from odontoblasts.

1. Hard dentine, tubes, no vessels, simple pulp (man).
2. Plici-dentine, the same folded, myliobates, labyrinth-odon, etc.
3. Vasodentine, tubes, containing vessels and nothing else. (Hake.)

B. Dentine developed from osteoblasts.

1. Osteo-dentine, channels, containing vessels and all other pulp tissues (pike).

The formative or pulp papilla forms and makes the tooth-shape when completed. (Fig. 14.) The enamel calcifies and joins the dentinal organ, this being to the detriment of the pulp-organ, atrophies, which absorbs gradually as the tooth grows older, and the primary eruption stage past, leaving the fully formed but smaller pulp to carry on the future nourishment and sensibility of the tooth.

The pulp is the foundation of the dentine germ until after calcification is completed. From then so long as it is vital it is the chief source of nourishment, nervous influence, and safety to the life of the tooth. (Fig. 6.) It is able to prevent the damage, to some extent, of micro-organisms. In its embryonal stage it sustains the odontoblasts in their function. The pulp is the rough miniature of the tooth, but sometimes off-shoots are found running out as far as the surface of the enamel, carrying with them acute sensibility. (See case reported, *University of Michigan Dental Journal*, March, 1902.) The pulp is extremely liable to changes in temperament, disease, thermal conditions, nervous irritability, according to age and the species of animals in which found. The recent (1901) anatomic work of Dr. W. Lepkowski, Cracow, Poland, on the distribution of the vessels in the teeth of man will be a great help.

This monograph is a continuation of his brochure on the vascular distribution in the teeth of mammals (1897), and I cannot do better than quote his words in relation to the blood supply. "In an embryo, 7 mo., the inferior alveolar artery gives one branch for each tooth-germ which enters at its base. As it progresses the walls thin, so that they cannot be distinguished from the veins accompanying it. (Fig. 15.)

FIG. 15.



Blood-supply tooth plexus under odontoblasts. (Injected.)

FIG. 16.



Deciduous molar. Permanent bicuspid (injected). Periosteal vessels.

FIG. 17.



Raschkow and Boll nerve-plexus in pulp. Medullated nerve-bundles. (Special stain).

The vessels rise to the apex of the pulp and there spread out fan-like from the point to the base of the tooth-germ as capillaries. They proceed *between* the odontoblasts *up to* the *dentine* layer, and there form broad loops which unite to each other. At the base of the tooth the vascular net is always denser and more interwoven than towards its point. This arrangement of vessels follows the arrangement of odontoblasts. With carmine-stained specimens a broad seam of odontoblasts at the base of the tooth-germ just where the vessels also are present in greater density; towards the apex of the tooth-germ, the breadth of the odontoblast seam decreases, and then, the net-work of the vessels becomes more loose. This is easily explained, for it is on the base that new substance is deposited for the tooth and the vessels and odontoblasts are chiefly concerned in the process. The vessels which externally surround the enamel-organ are connected with the pulp-vessels. (Fig. 6.) The vessels originate in the interalveolar arteries which supply the spongy bone of the maxillæ. They spread out in dense weave at the surface of the enamel-organ, but do not, however, penetrate between the cylinder cells which line the enamel-organ and play an active part in the formation of the enamel; where more enamel exists, the net-work of vessels is denser. (Fig. 16.) When the activity of the enamel cells ceases, the vessels also slowly undergo a retroformation. Within the tooth the formative activity of odontoblasts and vessels continues until the dentine of the crown and roots is built up. The disappearance of the vessels on the enamel-organ begins at the summit of the tooth, and proceeds in the direction of the root. Of the pulp-vessels, individual vessels or also bundles of them occasionally separate, perforate in places the dentine layer and the enamel layer, and obtain connection with the vessels surrounding the tooth-germ on the outside. In dogs the enamel thickness is greater than in human teeth, hence they have a richer vascular system.

When do the odontoblasts first appear, and if the odontoblasts are nerve-cells they must be of epiblastic origin, are questions I have not yet decided.

So far the vascular supply of the odontoblasts seems fairly well proved to be a plexus, and with it comes up the nerve-plexus of Raschkow, and Boll stated that the fibrils inosculate with the branches of the odontoblasts. (Fig. 17.) Clinical phenomena favor such a conclusion. Thermal changes can be perceived long before the plexus or pulp is exposed; and why should such stimuli

as dilute acids or slight touches of a steel instrument be felt if no path between the soft tissues of the dentinal and nervous system existed? The thermal changes might pass, but hardly the effects of a dilute agent, as silver nitrate or zinc chloride, without a nervous system of communication.

Another disputed point is whether or not besides the nerve-endings in the pulp there were also nerve-endings in the solid portion of the tooth. While some believe the nerve fibrils end only *among* the bodies of the odontoblasts, at the periphery of the pulp, others think that they may *actually penetrate the dentine* itself, inasmuch as it is known that if the gum be retracted the dentine is sensitive at the margin of the enamel. Some ask the question, "Do the nerves of the dental pulp originate in the odontoblasts?" We say no, they enter from the apical foramen and pass upward as medullated, then lose their sheath and go as nerve-fibrils to the odontoblasts as a plexus. (Fig. 17.) If odontoblasts are secretive, may they not be hypoblastic, and so explain their columnar shape and function as well as forming the mesoblastic layer, which is really the connective-tissue matrix, but has a *characteristic point that in this tissue the fibrils never join to form connective-tissue fibres*. We may have nerves ending in connection with these epithelial cells, just as we do in the gustatory cells, olfactory cells, etc. I do not remember seeing any particular statement or work stating why, or even demonstrating the reason why, we have placed the odontoblast cells as mesoblastic. If we decide odontoblasts (*membrana eboris*) to be dentine builders, secretory cells, cannot they resemble the special epithelium products as do the secreting glands (buccal, pancreas), which are originally developed from a layer of epithelium, both epi- and hypoblastic, by an invagination or downward growth of cells covering in the consolidating (mesoblastic) connective-tissue formative cells? The apex is the first differentiating point, with a gradual descent on either side of the conical bulb till it reaches the neighborhood of the cement region, the odontoblasts ending here in many slides at this stage. Compare the glands of Lieberkühn in the intestine, simple tubular, and those of frog's skin, simple sacs. The differences are for the most part modifications of arrangement, with a view to increasing the secreting surface at the cost of as little space as possible. Whatever degree of complexity in a secreting area, its essential points remain the same. A layer of secreting cells (epithelial) usually on a base-

ment membrane, surrounded by capillary blood-vessels, supported in connective tissue, bathed by lymph passing through the spaces in the matrix—cells varying in shape according to their location, pressure, and function. We must remember we have two distinct layers of epithelial cells in the epithelial band,—the lowest, the stratum Malpighii, being polygonal columnar, and forms the germinal layer, a possible combination of hypoblastic epiblast, and again in some specimens joining the mesoblast. Here is room for investigation if the epiblast or hypoblast may not be the origin of the odontoblasts. We know the coelom theory of Hertwig has received many careful supporters in the light of present researches. A careful study of slides will show in some animals a marked differentiation into two layers of the inner tunic of the enamel-organ nearest the formative pulp surface, in some places united, in other places they have been separated, one following the enamel-organ, the other remaining on the apex of the pulp. In further stages a deposition of homogeneous material is being laid down, on this line between the two layers and at a different rate of growth. *The most important point seems to me to prove the origin of these cells, to study their function; because if pure secreting epithelium, if odontoblasts are of connective-tissue origin as described by Piersol and others, if sensory nerve-organs entering the tubules, it is evident we can hardly have described their function correctly. It may be asked, is the odontoblast of connective-tissue origin—morphologically identical with nerve-cells and axis cylinder fibres (Boll, Morgenstern, Römer), or analogues to bone, differing by being derived from embryonal connective tissue, having fibres passing into the dentinal tubules, similar to the soft uncalcified perforating fibres of Sharpey. (Kölliker.) (Fig. 14.)*

When a tissue is found foreign to its position, we call it a pathologic condition; and in this connection I wish to call attention to those specimens of myxomatous pulp whose whole surface is covered with pavement epithelium, of which I have specimens. I believe Dr. Baker,¹ England, also showed a specimen in 1892, at the British Dental Association, which was covered with squamous epithelium, and Römer has lately called attention to this condition. Can these be inclusions originating from the epithelial cord or an overgrowth like a papilloma? Dr. R. T. Stack, 1897, Professors

¹ Journal British Dental Association, 1892, 1897, 1902.

Tomes, Dentz, of Utrecht, and Mummery have called attention to the bulbous dilatations in connection with the dentine tubes. If processes of the odontoblasts are pulled out, and traced to show the ramifications of the tubules and so on to definite endings in the enamel as a bulbous shape in ground sections?

Is it yet proved how far the dentine of a tooth without a pulp may be considered dead? How far nutrition in the sluggish form required by dentine may not be carried on in the collateral plasmic circulation through the cement corpuscles, and these bulbous or fusiform dilatations in the dentinal tubules more especially being found in temporary teeth dentine. In teeth with incompleated roots they are numerous, as well as in those irregularly placed in the mouth and which are imperfectly developed, says Patsch. So far as I have gone in my experiments on special staining I have, I believe, obtained some slides that show the nerve relations and arrangements of the odontoblasts that will be given later. (Fig. 18.) At present the best illustration that I know is under the termination of the sensory nerve-endings. We know the medullated nerve-fibre loses its medullary substance (white matter of Schwann) before reaching its ultimate distribution. They are especially plentiful in the sympathetic system, as well as in the cranial nerves and the olfactory. Whether the fibre be motor or sensory bears no relation to its size; the length seems to directly influence its diameter, since we find long distance fibres are thicker than those only going short distances, and this may account for the very small nerve-fibres in connection with the odontoblasts.

Whether we can liken teeth to the organs of special sense is not yet proved, but I think a brief review of the peculiar modifications of shape and structure which the epithelial cells undergo and form the organs in which the nerves terminate as neuro-epithelium will illustrate my findings in the nerve relations of odontoblasts fairly well. Any one who has done special histologic work in isolating neuro-epithelium from the nose, rods and cones of the retina, hair-cells of Corti's organ, and other parts of the membranous labyrinth, the taste buds, can find another example in the teeth. Briefly, two elements are found, the nuclear and the outer, peripherally directed segment, which is highly specialized and often ends in stiff, rigid, hair-like processes. The outer part receives the external impressions, whilst the inner segment is in close union with the nerve-fibres. Within the Malpighian layer we find the tactile

FIG. 18.



Nerve-supply of pulp and vessels. (Weigert stain.)

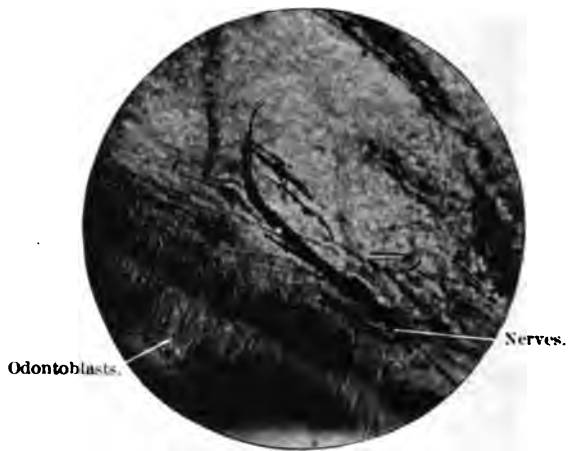
FIG. 19.



Fibrillæ.

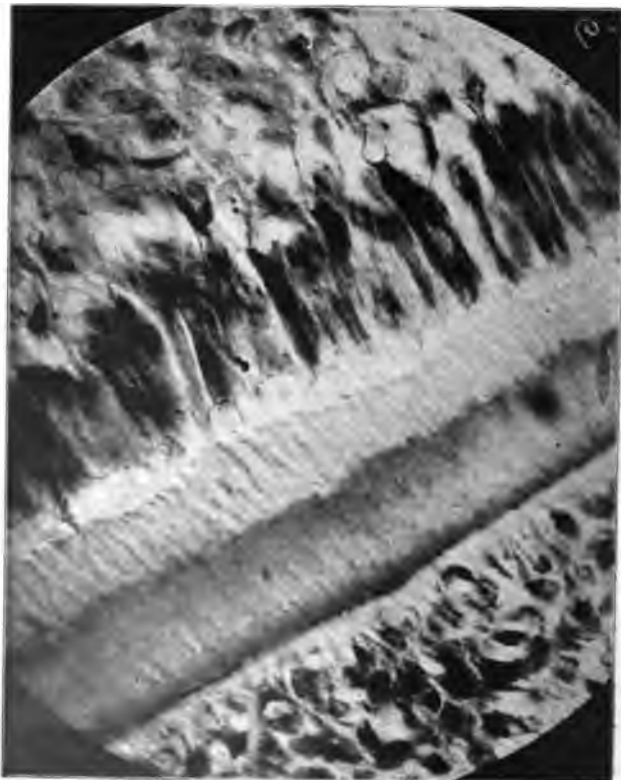
Terminal nerve-fibrillæ within odontoblastic zone, passing into the intercellular substance of odontoblasts which are out of focus. (Gold method.)

FIG. 20.



Medullated nerves, pulp passing under odontoblasts. (Special stain.)

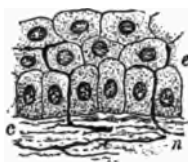
FIG. 21.



Odontoblasts, fibrillae, dentine, and enamel.

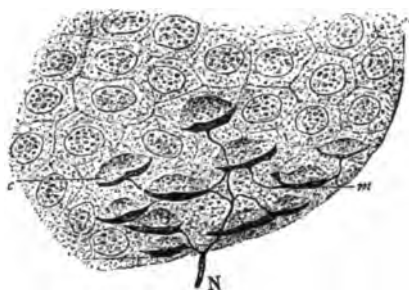
cells, simple or compound. The former, small, oval, nucleated cells, possibly modified ganglionic. The terminal fibres pass between or on the side of the tactile cell, and are lost in its substance. (Figs. 22 and 23.)

FIG. 22.



Termination of sensory nerve-fibres within the epidermis; gold preparation: *e*, deeper layers of epidermis; *c*, subjacent connective tissue; *n*, nerve-fibrillæ penetrating among the epithelial cells

FIG. 23.



Special nerve-ending within the epidermis: gold preparation: *N*, nerve-fibre entering the epithelium and dividing into the fibrillæ which are connected with the tactile disks, *m*; upon these latter rest the tactile cells, *c*. (After Ranvier.)

In the pulp we find the nerve-fibres originating from the medullated nerves, which are non-medullated, becoming smaller until the neurilemma disappears and the bundles of new fibrillæ continue as naked axis cylinders, forming a ground plexus; these later fibrillæ break up into their primitive, which, interlacing, form terminal plexuses just beneath the odontoblast layer (Fig. 19), near the line of all bodies or basement membrane, which, so far as I believe, is not demonstrated, but is best known and described as the basal layer of Weil, and as such more easily placed. The nerve-plexus fibrillæ cross this in T. S. developing teeth (cut by the freezing method or Weil's, stained in borax-carminé—gold chloride), and run between the odontoblast cells. (Figs. 20 and 21.) The majority so far being lost sight of, but here and there fibrillæ may be seen passing beyond the periphery of the cells into the forming dentine and specimens show the same, as well as odontoblastic processes. Whether blood-vessels are found stretching beyond the cortical layer of the pulp into the basal layer of the membrana eboris has been denied, as well as even the existence of this layer by von Ebner. It is in the crowns of teeth (fully formed) where the basal layer of Weil is most marked, below the layer of dentine that is first completed, says Mr. Mummery, and his description of the fibres passing

from the pulp between the cells to the dentine across Weil's layer, showing vessels in the basal layer, I concur in.

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 STRAY THOUGHTS ABOUT REGULATING.¹

BY S. E. DAVENPORT, M.D.S., D.D.S., NEW YORK, N. Y.

NOT because I have anything new to divulge about the regulation of teeth do I appear before you to-night, but because of pressure brought to bear upon me by our board of directors, who thought it time for me to do something.

When I first began giving attention to the regulation of teeth, so hopeful was my disposition that I fully expected some day either to be told by some experienced *confrère*, or to discover for myself, a series of "underlying principles" so governing the movement of teeth that an understanding of them would enable me to apply the proper rule and consequent appliance to every case, thereby securing an infallibly successful result with but little trouble to the patient or myself.

In the mean time, while waiting for the above described revelation to arrive, I blundered along as well as I could, taking from all

¹ Read before The New York Institute of Stomatology, April 1, 1902.

men who wrote about regulating, and from all whom I could hear talk about it, such ideas and points as seemed to me to be practical, changing some for the exigencies of individual cases and deriving more, I am sure, from these writers and speakers than from any originality which I was able to bring to bear.

I regret that I am unable now, after twenty-five years of some experience with this kind of work, to give a list of those principles which in my youthful days I expected some time to acquire; but while I am a little more versed in the possibilities of tooth movement than I was, and even in its probabilities, I am still looking and longing for fixed principles, a knowledge of which would enable us to eliminate even partial failure from our results and to undertake the most difficult cases without much preliminary study.

While there are numerous well-fixed laws governing the movement of teeth and the changes in their environment most helpful to the student of orthodontia, I have been unable to learn of many rules applicable to all classes of cases which would enable one to describe methods based upon such rules with the words "regulation made easy."

In spite of what has just been said, my opinion is that, allowing for differences in the density of the bones and other like variable factors, probably no part of our work is more satisfactory or more stable of logical results if it be approached from the proper direction, one step after another of a carefully devised plan being taken.

I remember well a pet remark of Dr. Bogue's so applicable to this thought as to bear repetition,—“Do it, don't do *at it*!”

The regulation of teeth is one of the most important branches of dental practice, but it seldom receives the attention it deserves even by those who attempt to pursue it.

Hastily formed opinions are often as hastily expressed; spasmodic effort is made to move certain teeth often before the dentist has decided upon his general plan, the result being discouragement of all concerned and a resolution made more firm in the mind of the operator by each failure never to attempt regulating unless forced to.

A proper diagnosis of the needs of each case requires not only a definite appointment for examination of the child's mouth, but the taking of impressions at that sitting and a postponement of the decision as to the plan to be followed until the casts are completed and studied.

The patient should then be seen again and the decision arrived at from the study of the cast tested by a further study of the patient's face.

I wish to emphasize the necessity of studying the face and the plaster cast together. Neither is sufficient, in my opinion, without the other as a basis for a plan, and if a cast were to be shown to me to-day in consultation, while I might give an idea as to the mechanical possibilities, it would not be safe for any one to follow the suggestion unless the probable result would coincide with the needed change in expression of the child's face.

No final advice should be given until the procedure as described above has been gone through with, errors of judgment being much less frequent when a study is made of the teeth, the face, and the plaster cast all at one time.

When the cast is made, the view of the lingual surfaces of the teeth and their occlusion gives us a great advantage over the study of the mouth alone, unable as we are to see the inner surfaces of the teeth when closed.

One of the principal reasons for advising thorough study of a properly articulated plaster cast of every case before the formation of a plan is that extraction would thereby be dispensed with. The avoidance of extraction is desirable in nearly every case, therefore never advise extraction in response to impulse.

The many objections to extraction have been ably brought out in the writings of Dr. Isaac B. Davenport, of Paris, and Dr. E. A. Bogue, of New York, and it is not the province of this paper to mention those objections in detail, but one point that I wish to emphasize is that extraction not only produces the lamentable conditions described by the authors referred to, but actually increases the difficulties the dentist has to contend with when striving to regulate teeth.

I believe it safe to say that wherever nature's laws are broken our task is made greater. Without extraction we have in the crowded arch only to expand the arch and rearrange the teeth. Extraction makes the condition at once abnormal. Many forces of retrogression are started, and in place of simply assisting nature we are obliged to combat her. Frequently cases which appear on first examination to indicate the need for extraction of one or more teeth prove later the error of such judgment, for when the arch is sufficiently expanded for the needs of the other arch and for facial

expression the full number of teeth often proves insufficient to fill the space secured.

The casts exhibited illustrate this point, number one showing the condition as the teeth were when a gentleman who practices in New York recommended the extraction of a superior bicuspid for the purpose of, in his opinion, simplifying the process of regulation. Cast number two shows the case four months later, unfinished, but with the upper arch expanded and, as will be seen, too much room existing even without extraction.

The time being insufficient for considering further the many objections to extraction, I will refer to some methods for making the patient's suffering as light as possible.

My experience has taught me that in both regulating and wedging the suffering is caused almost entirely by interference with the gum, for teeth can be moved a considerable distance with but little pain or soreness if the appliance or material used for the purpose can be kept away from the gum.

This fact accounts largely not only for the great suffering consequent upon the old methods of wedging when rubber and wood were generally used, but also to a degree for the lessened pain from wedging with tape and for the almost entire absence of discomfort even from wedging with fish-line or other suitable cord tied between the teeth.

The great advantage of the last-mentioned method of wedging is that the more the material swells—and some of the most tightly twisted continue to swell for more than forty-eight hours—the further away from the gum it is.

So great a change has this method of wedging made in my practice that many patients who previously dreaded and suffered from the wedging more than the subsequent operations now assure me that they would hardly know the teeth were being wedged were it not for the detection by the tongue of the little knot or ends of the line.

This comment upon wedging materials is not so much of a digression from the subject of this little paper as it at first seems, inasmuch as the use of fish-line wedges constitutes a considerable part of many minor cases of regulating.

Dr. Isaac B. Davenport, of Paris, was, so far as I know, the first to make use of fish-line for wedging.

At the May, 1899, meeting of the Institute it was my privilege

to describe, with some attention to detail, Dr. Davenport's methods of adjusting the fish-line and the result of my own experience with it for quite a number of years.

The record of this can be found in the *International Dental Journal*, September, 1899, pages 586, 587.

Because of what I have learned, considering the advisability of keeping away from the gum as much as possible, I have for a long time depended almost entirely upon fixtures easily removable, relying principally upon springs and screws for the power of action.

At first glance this would seem to many bad generalship, enabling the patient, as it does, at any time to remove the fixture, but this apparent disadvantage amounts to nothing in comparison with its many advantages when one refuses, as I think all practitioners should, to undertake a case of regulating unless sure of the earnest co-operation of the patient, or at least of the one having most influence with the patient.

Among the advantages possessed by removable fixtures are the possibility of keeping both the teeth and fixture clean, the lack, as above stated, of uncomfortable impingement upon the gum, the freedom of the patient's mouth at meals from the appliance and the consequent enjoyment of food with lessened interference with nutrition, and last but not least, the absence of that feeling of utter hopelessness which a secured fixture usually gives a child, resulting often in not only a lessened interest in the result, but sometimes in a desperate disregard of all appeals for co-operation.

Acknowledging the rule of exceptions, there are, of course, occasional cases necessitating the opening of the bite, in which the patient must wear an appliance during meals, removing it only for the purpose of cleansing, but wherever possible, and in spite of a knowledge of strong advantages possessed by certain fixed systems of regulating appliances, such as the Angle, Knapp, etc., I should advise the use of removable appliances if there were no other reason than the greater health of the mucous membrane which almost always accompanies their use.

It is not necessary for me to even remind my hearers that regulating plates must not extend over the masticating surfaces of the back teeth unless a shortening of the bite is desired, and fortunately, since Dr. V. H. Jackson, of New York City, so completely systematized the use of wire cribs and half-cribs, we are able to

adjust to the teeth fixtures accurately and securely without shortening the bite to any great extent.

Too much credit cannot be given to Dr. Jackson for all he has done for the great department of orthodontia, and while, of course, we may at times prefer some modifications of the fixtures which he so strongly advises the use of, his inventive genius and free contributions to our knowledge have placed the whole profession under great obligation to him.

EXPANSION OF THE UPPER ARCH.

While I have successfully used the Coffin plate and modifications of it for expanding the upper arch, which, by the way, is one of the most frequent phases of regulating we are called upon to perform, for a number of years I have in almost every case used a rubber plate, split part way through, with a gold and platinum or platinum and iridium screw, made in my own laboratory, for the motive power, and so arranged that if advisable the patient may take charge of the expansion.

As this is not a double-ended screw, the pressure and consequent movement of teeth is slightly unequal, and, as every arch needs greater expansion on one side than on the other, this unevenness of action is an advantage, for one can always so place the screw when making the plate as to give the greatest movement to the side requiring it.

The position of the screw in these split plates and the length of the split govern the teeth moved and the amount of movement effected.

These split expansion plates are often valuable for use after sufficient expansion has been secured, not only as temporary retainers, but to hold little screws which are placed in the rubber behind individual teeth needing more movement in some direction.

For this purpose German silver wire of various sizes cut in a coarse thread screw-plate answers as well as anything, with the advantage of being inexpensive.

German silver is a very valuable aid in regulating, it being suitable for the Jackson cribs and half-cribs, for spring wires when the greatest force is not needed, for use in rubber fixtures where strength without bulk is desirable, and, as has already been said, for the screws so often needed in the edge of rubber fixtures.

German silver does not answer for the expansion screws or any

designed to run in metal nuts, for the material does not possess sufficient strength to make its thread durable when in contact with metallic surfaces.

While referring to German silver and its uses in regulating, it may not be amiss to remind my hearers that it is very useful in other ways to the dentist, inasmuch as it can be soldered with eighteen-carat solder without injury, is not affected by contact with fresh amalgam or even pure mercury, and rubber vulcanizes about it almost as well as around gold or platinum, provided the German silver has been kept from the tarnishing influence of the atmosphere, and even then if the tarnished surface be removed with sand-paper or a file.

There are two kinds of German silver, and for dental purposes the hard and springy variety is desirable. It is procurable of Patterson Bros., 27 Park Row.

OPENING THE BITE.

The expansion of the back part of a lower arch is usually most readily effected by a plate made after the Coffin principle, using either piano wire, German silver, or platinoid for the spring connecting the two parts of the plate.

If a general expansion of the front part of the arch is desirable, it may be effected either by the use of Dr. H. A. Baker's plan, which is a rubber plate the upper portion of which is split as far back on each side as the teeth need to be moved, an ingeniously bent spring of piano wire or platinoid furnishing the power; by a rubber plate split somewhat as in the Baker plate, but with a gold and platinum jack-screw instead of a spring; or by a Jackson plate or rubber modification with German silver or platinoid springs.

When certain lower teeth only need to be moved out, an ordinary rubber plate so constructed that the closing of the jaws will cause pressure may be used, the little German silver screws being placed in the rubber behind the offending teeth and turned out a little daily with pliers or a watch-key.

I have said so much about the use of these little screws in rubber plates, and I find them so valuable, that it may be best to say a few words regarding their application.

The size of screw desired having been chosen, it is measured in the bur gauge and a bur one size smaller than the screw is placed in the engine ready for use.

The rubber plate then being in position in the mouth, the angle desired is marked with a lead-pencil upon the rubber, the plate then being removed and drilled for the screw, which is turned into its rubber socket with a small hand-vice.

Often the screw will need to entirely penetrate the plate in order that some material may be ready to be turned out against the tooth, and until it is turned out the exposed end should be covered with soft gutta-percha or composition to protect the tongue.

Usually in regulating the dentist will think of more than one way of doing the same thing, and if so, it is not only his duty but for his interest, and will make for the success in the case, to choose the method least uncomfortable for the patient and the least objectionable in appearance.

OPENING THE BITE.

One of the most frequent defects which we are called upon to treat is that class of so-called short bite cases in which the lower incisors bite almost into the gum behind the upper incisors. This condition is caused by a variety of influences, among which I will mention extraction, tardy development of some of the back teeth, and previous attempts at regulation by the use of plates capping the teeth.

Oftentimes the correction of this condition is the key to the solution of all the problems presented by that mouth, and is therefore the first trouble to be overcome.

It is generally corrected by a thin rubber plate in the roof of the mouth held up by atmospheric pressure or by light half-cribs, the lower incisors and cuspids biting against the rubber behind the upper teeth in such manner as to open the bite and leave the molars and bicuspid without occlusion.

Not only does elongation of these back teeth naturally follow, but the lower six front teeth, receiving as they do the entire force of the bite, are slowly but perceptibly shortened, and often in a few weeks the back teeth with the plate in position and the mouth closed will be in firm contact.

Should the amount of change effected be insufficient, an addition of rubber to the part of the upper plate against which the lower front teeth strike will result in an added elongation of the back teeth. Dr. C. A. Woodward, of New York City, an expert in

orthodontia, has carried to successful conclusion many important cases of this character, and treats them by placing temporary gold crowns upon the lower bicuspid.

This method has the advantage of relieving the patient of a plate, and never causes any forward movement of the upper front teeth, which does occasionally follow the use of a plate in the roof of the mouth, but it has the disadvantage, it seems to me, not only of failing to shorten the lower incisors and cuspids, sometimes so necessary, but, the great pressure of mastication being borne entirely by the bicuspids, usually shortens them materially.

While nature usually allows these bicuspids to elongate quickly when the gold crowns, having effected their object, are removed. I confess a preference for either the plate method or a combination of the two, in spite of the success attending my use of Dr. Woodward's method in two or three cases.

Some one has said, "Fortunate is the man who lacks inventive genius, for he is able without prejudice to choose the best ideas of all men."

This seems to me to be in a measure true in influencing success in regulating, the widely varying demands of the different cases presenting requiring the use of many principles and forces.

One possessing great powers of invention is not only apt to have his ideas running in a groove, but is likely to depend too much upon himself for plans and methods.

Still, there is no department of our specialty, probably, which so successfully trains one of even ordinary ability to think and act quickly and logically as does orthodontia.

It has always seemed to me, therefore, that those dentists who decide not to accept or "bother with," as the phrase goes, regulating cases deny themselves the advantages of one of the best possible training schools in which patience, quick thought, and readiness for emergencies are taught more effectually than by any other department of our work.

Regulation of the teeth also fills the longing felt by many of us for action outside of ordinary dental practice, giving sufficient diversity to our work to prevent the mental inertia which is so apt to come to the professional man who is called upon to do practically the same things each day.

THE BRITISH DENTAL ASSOCIATION AND THE NATIONAL DENTAL ASSOCIATION OF THE UNITED STATES CONTRASTED.

BY WILLIAM H. TRUEMAN, D.D.S., PHILADELPHIA.

THE *Dental Record* (London) for July, 1902, contains a report, covering some nineteen pages, of the last meeting of the British Dental Association, at Shrewsbury May 22 to 24, 1902. While it is a mere *résumé*, it is interesting and in regard to some matters invites careful thought. In the first place, we are informed that the Association has twelve hundred and five members, that during the past year eight only have resigned, and thirteen names have been dropped for non-payment of dues. This is a remarkable showing. It demonstrates the keen interest the dental profession of Great Britain takes in its National Association, and their loyalty. The loss of only thirteen from non-payment of dues for two or more years out of a membership of twelve hundred and five is a record of which but few dental societies can boast.

Now, why is it that in England so large a proportion of qualified dentists are members of the National Association, while in the United States the National Association is so poorly supported, and numbers so few? If our national society was in practice, as it is in theory, a representative body, the disparity would be seeming only. It is not so; its complex arrangement of permanent members and delegates makes the provision limiting representation of affiliating organizations practically null; for the so-called election of delegates that is annually gone through with by the bodies recognized by the National Association soon gives each one an opportunity, so that, notwithstanding the rule, every member of a local society may be a member of the National if he so choose. Only about one in fifty legal practitioners in the United States avail themselves of this wide-open door, while in England the proportion is about one in five or six. Geographical conditions may explain this in part, but is it a full answer?

There is another matter. In the report referred to we are informed that the British Dental Association has an invested fund of two thousand pounds (about nine thousand six hundred dollars); to this three hundred pounds are to be added; in addition to which

it has two hundred pounds in its banker's hands. In addition and apart from this fund it maintains a benevolent fund,¹ with a large and constantly increasing sum at interest, notwithstanding that its trustees from its yearly income are contributing to the support of disabled members of the profession, their widows and children. Quietly, that benevolent fund has done and is still doing a world of good. It has made comfortable the last years of worthy but unfortunate practitioners, regardless of whether they are members of the Association or not; it has stepped in at the right time, and in the right way, to assist the widows of those who have fallen by the wayside, and has cared for and educated their children.

In addition to all this, the British Dental Association has for years published a monthly dental journal all its own, absolutely free from trade entanglements of any kind or character. In its beginning this journal, as a dental journal, did not amount to much; it was a serious expense; while each year the deficiency became less, it continued for many years a heavy drain upon the finances of the Association to make good the difference between the income and the expenses of the journal. The time came, however, when they balanced; when the *Journal* began to be a source of profit; then it expanded, took on a new character; and to-day it is the peer of any dental journal in the world. In the mean time it had been a bond of union between the local societies and the national body, contributing to the success of each. In the beginning it was little more than a medium for announcing dental society business, but as such was useful to those who desired to keep in close touch with that phase of professional progress. It still is the recognized official organ of the dental profession in Great Britain, and still retains its usefulness of keeping in close touch the local and national associations by being the medium through which their various announcements are made to the profession, and through which much of their proceedings are published; but in addition to this, in its present form it monthly publishes a large amount of valuable original matter and a judicious selection of translations from foreign dental journals which otherwise would be unknown to English readers. Its large circulation has secured an extensive and varied advertising patronage, adding not only to the

¹ Donations and collections for the benevolent fund, £212; amount of investment, £2192; paid to beneficiaries, £648 (\$3110).—Report, 1902.

profits of its publication, but also to its value as a professional journal.

Its monthly visits are a constant reminder of the existence and usefulness of the British Dental Association, and keeps its readers, whether members or not, well informed of all its doings, financial and otherwise; it takes them into its confidence and invites their interest; as a result, the Association has some twelve hundred members, about half of whom annually attend its meetings.

In contrast to this, our National Association has no official organ, but trades its proceedings to whoever makes the best bid. The successful journal selects such of its proceedings as suits its purpose, and dribbles them out month by month, as suits its convenience. Its proceedings in full are for its members only, and are as inaccessible to outsiders as are the secrets of a Masonic lodge; not a volume can be obtained for love or money. It has no interest in, nor does it in any wise assist, the local societies, nor does it do anything more for the profession at large than do many State and local societies. None outside the circulation of the favored journal are reminded of its existence from one year's end to the other. As a natural result, out of the twenty or twenty-five thousand legal practitioners in the United States, a beggarly few hundred only are members, or take in it the slightest interest. It offers no inducement whatever to those unable to attend its meetings to add to its funds or influence by becoming members.

Reviews of Dental Literature.

SOMNOFORME: A NEW ANÆSTHETIC.—At the last meeting of the British Dental Association, at Shrewsbury, May, 1902, a paper was read with the above title, prepared by Drs. Rolland and Robinson, of Bordeaux.

Somnoforme is said to be composed of sixty parts chloride of ethyl, thirty parts chloride of methyl, and five parts bromide of ethyl. While some little care is needed in its preparation, the formula is not secret. It is credited to Dr. Rolland, Professor of Anæsthesia at the Bordeaux Dental School. It is claimed to be safe, readily used, quickly producing its effect, followed by quick

recovery without unpleasant after trouble, and especially useful in dental and other like short operations. Its effects can be continued as long as needed, and it may be repeatedly administered without risk, if on recovery the operation is found to be incomplete.

The apparatus for its administration is very simple, an ordinary handkerchief folded so as to form a cone-shaped mask, in the folds of which is placed a piece of paper to prevent evaporation, the apex of the cone being completely filled with a piece of cotton-wool. Upon the cotton is sprayed from five to ten cubic centimetres of somnoforme, five being sufficient for ordinary cases; the cone thus charged with somnoforme is placed over the face, covering the mouth and nose completely, and as far as possible no air being allowed to pass. No precautions are needed as to abstaining from food before its administration; or regarding position; nor is it necessary to loosen the collar or waistband, or, in the case of ladies, to undo stays or loosen their underclothing.

The advantages claimed are, no cumbersome apparatus; instantaneous action; rapid elimination and rapid return of consciousness and use of faculties; security both in the beginning, during, and after effects.

In answer to questions during the discussion of the paper, Dr. Robinson said the stability of the drug could be maintained provided the stopper was hermetically sealed. Dr. Rolland suggested that it might be best to have it put up in glass capsules containing just enough for a dose. It is necessary to exclude air during its administration, to avoid trouble from excitement of the patient. With regard to its danger limits, he said, "Any anæsthetic is bound to kill if continued long enough." He had found a cat in the street which had had its back broken by a dog; he kept the cat under the effects of somnoforme for eight consecutive hours; during the entire time it was in an anæsthetic sleep; it was then killed by an overdose. (*Dental Record*, London, July, 1902, page 312.)

In Ash & Sons' Quarterly Circular, June, 1902, page 148, we have a report from Dr. Pinet, Professor of Anæsthesia at the Dental School of Paris, and Ch. Jeay, chief of the clinic at the same school, giving their experience in the use of this new anæsthetic. The formula is slightly different,—chloride of ethyl, 60; chloride of methyl, 35; bromide of ethyl, 5. In the experiments related, anæsthesia was produced in from thirty to forty seconds, as a rule, and lasted about thirty to ninety seconds. In some cases it was all that

could be desired, in others there was some excitement, which in a few cases was quite violent; unpleasant after effects were in some cases noted.

The excitement in some cases seemed to be due to a want of air, a true "air hunger;" and in others it is ascribed to a leakage of air under the mask or cone, which retards the anæsthetic effect. To remedy this Dr. de Crésantignes has invented an apparatus which he calls a "face-piece holder with a bladder." "This extremely ingenious apparatus allows the patient half a litre of non-renewable physiological air, which is indispensable for satisfying the imperious demand of the patient to fill his lungs."

"Thanks to this apparatus, the patient respires freely, does not struggle, and the close-fitting recommended by Dr. Rolland is obtained much more easily than with the old face-piece."

This small amount of air assists the rapid action of the anæsthetic without unduly diluting it, and it is carried into the lungs with the air; while with a close-fitting mask, without this provision, the patient, being unable to breathe freely, fails to take in the requisite amount of somnoforme vapor to quickly produce the desired effect.

It will probably be some time before the practical value of this new anæsthetic in its relation to dental practice can be determined. In the mean time it is well to observe caution until in skilful hands its merits and demerits are scientifically investigated, and its advantages, if any, over other accepted safe anæsthetics have been demonstrated by actual use. It is to be borne in mind that, of all anæsthetics, the chlorine combinations are most dangerous.

W. H. T.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the office of Dr. S. E. Davenport, No. 51 West Forty-seventh Street, New York, on Tuesday evening, April 1, 1902, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

down into position. Two or three years afterwards the young lady died, so there ends the history.

Dr. H. L. Wheeler.—I have sent to Worcester for a couple of models of some regulating that I did some years ago, thinking that it might be of interest. The case is of a woman thirty-two years of age. The centre of the arch was considerably to the left of the median line of the face. The right upper lateral was missing entirely, and the left very imperfect in form. I made an arch of two pieces of wire, using the wire of Ash & Sons for tube teeth. One I fitted around the lingual and one around the labial surfaces of the upper teeth. For about one-third the length of this wire I cut a screw-thread, so that it would come immediately in front and behind the central incisors. I made some nuts from a five-cent nickel, and after placing them on these threads resoldered the piece again, so that it made one continuous wire with a screw-thread, one-third of its length in the centre. Then by putting a German silver wire between the teeth and turning these nuts gradually I was able to bring these teeth into the proper position regarding the median line. By restoring the right lateral with an artificial crown, and making a shell with a porcelain facing for the left lateral, the effect was very gratifying. You can probably understand the case better from these models.

Dr. T. W. Onderdonk.—Referring to the case of Dr. Wilson, I find that the measurement from a point anterior to the right cuspid to the centre of the median line is about one-eighth of an inch different from that of the other side, and the radiograph shows that apparently a little notch occurs on the side of the central against which these unerupted teeth rest. I judge there is not space enough to allow these teeth to come down. I would advise an increase of space between these two teeth.

Dr. J. N. Farrar.—Though the subject is very interesting, I do not know that I can suggest anything that has not been mentioned already. There seems to be a discrepancy between the picture and the cast here shown, but I can readily understand that the cast may be imperfect. There is lack of room for two teeth, and I think the first thing to do would be to make sufficient space. In such cases I sometimes put in a little plate bearing an artificial tooth and further separate the adjacent teeth by gold fixtures on each side of the artificial tooth. Cases treated in this manner have generally proved successful. When there does not seem to be natural (physiological) force enough in the socket, some mechan-

ism may be necessary to draw the tooth down. One good method is by getting hold of the tooth with a small wire slip-noose, and, attaching this to a plate, arranging a screw that can be turned a certain degree every day.

Sometimes the irritation from separating adjacent teeth is sufficient to start delinquent teeth down, but whether it would work in this case I cannot say. It has been claimed by somebody that the normal process of erupting teeth is an inflammatory action. The X-ray process has been of great service to dentists in this line of work, and I wish a plan would be made whereby a picture may be easily secured without risk to the patient.

Dr. C. F. Allan.—I would like to put on record a matter of heredity in connection with anomalies in dentition in a family of patients who have been under my professional care during all the years of my practice. One of the very first patients whom I ever attended was a young man of this family a little my senior, who came to me with an aching upper sixth-year molar. He had a particularly good set of teeth, and this aching molar was almost perfect. I remember there was one little gold filling on the morsal surface, with no other break in the integrity of the tooth, and yet it was aching.

My treatment would be a long story which I will not burden you with; it ended in the extraction of the tooth, much to my patient's relief and my own disgust.

Perhaps three or four years afterwards he came to me and wanted to know what "that meant," calling my attention to a little conical tooth partially filling the space of the extracted molar.

This supernumerary tooth, practically formless and with very little root, was easily taken out, and its presence, not thought of in the time of trouble, of course readily explained the discomfort he had had some years before.

A brother of the one I speak of had perfectly formed fourth molars posterior to the wisdom-teeth, but about as much smaller than these teeth as the wisdom-tooth is smaller than the second molar. He had one on each side in the upper jaw.

A daughter, at present about forty-five years of age, has been coming to me some thirty years or more. Her teeth have required much attention. About five years ago she came to me with a fistulous opening on the buccal aspect above a sixth-year upper molar, and I could not understand it. This molar was a live tooth, and, in fact, there was not a pulpless tooth in her head. I treated the

fistula with strong escharotics, and it healed entirely, but when I saw her six months later, there was another fistulous opening on the palatal side and some tenderness to touch in the first molar and second bicuspid. With these precedent cases in view, I was quite certain of my position as to the cause and the remedy, and with the loss of the sixth-year molar and the second bicuspid the trouble ended; and when I was away in Europe the following summer a supernumerary tooth of some size came through in this space.

Dr. E. A. Bogue.—A lady came to me recently for whom I extracted a central incisor which I hold in my hand. The root is very rough, as the tooth was lost from pyorrhœa. A bicuspid, which I also present for examination, transplanted into the same mouth stayed there ten years and two months. The absorption that we usually expect to find within five or six years in implanted or transplanted teeth was not to be found on the end of this tooth at all. The cause of the loss of both these teeth was pyorrhœa.

To-day I saw a gentlemen for whom I had extracted an old root and implanted a central incisor that had been extracted about a year, and which at the time of implanting was much too light in color. It is now firm and has assumed the same color as the other teeth. He says he expects it to last twenty-five years.

Dr. Davenport then read his paper on "Stray Thoughts about Regulating."

(For Dr. Davenport's paper, see page 736.)

DISCUSSION.

The President.—Gentlemen, this is a very valuable and interesting paper of Dr. Davenport's. There are several points that I am sure will call out expressions of opinion.

Dr. Eames.—I wish to be enlightened in regard to the judiciousness of extracting teeth. I must confess that I have not reached that position in which I do not extract teeth for the purposes of regulating. I feel that there are cases in which it is judicious to remove some of the natural teeth, and that it can be done in some cases without malocclusion or malposition. I have had some experience with cases where the irregularity has been due to a deficient development of all of the bones of the face, and when there is this lack of development the stimulation that is given to the tissues operated upon has been extended over the entire face. When the teeth were in alignment it was out of harmony with the rest of the face and a condition that was unpleasant to see. I had one case

of brothers, in one of whom I was enthusiastic to preserve the natural teeth, but in the younger brother I extracted, and to-day I believe that the condition of the last case is the better of the two. Another case was that of a young lady with a thin face, teeth very much crowded, almost in a double row. I believe it would have been a great mistake to have expanded the arch enough to have brought them in alignment, rather than to have extracted as I did. I raise these points to see light if possible.

Dr. Farrar.—The paper covers so much ground that I hardly know where to begin the discussion of it. Perhaps a few words regarding extraction might be apropos. There is an idea among a few of our profession, some of them college professors, that it is wrong to extract teeth in regulating. I think such teaching is wrong. There are cases where extraction would be right and cases where it would be wrong. The aim should be to consider, first, facial comeliness. The objects of the correction of irregularities are, first, to improve personal appearance; secondly, to improve mastication; thirdly, improvement of speech.

In brief, the first thing we should consider in every case is, how can we most benefit the patient by the operation. If widening the arch will leave the teeth looking like a picket fence in the mouth (all teeth), it would be wrong to widen it. The size, breadth, and contour of the face have much to do with the decision, and should be considered. I believe in extraction where it is necessary for the improvement of the face. I have seen cases presented before societies in which widening the arch has distorted the face; these were cases in which extraction should have been done. On the other hand, I have seen extraction done where it was an outrage upon the patient. Extraction of the first molar often makes impossible even a fair result at regulating.

In all cases we must, of course, consider anchorage for regulating fixtures, and no tooth is so valuable as the first molar for that purpose. When the first and second molars are both present the anchorage may be said to be very firm. If the first molar be extracted, especially the lower, we are liable to have the second molar incline forward, but there are cases, of course, where we are obliged to extract a first molar. I have a case in hand now in which I extracted an upper first molar because it was dead, badly decayed, and abscessed. I could have accomplished the regulating much easier had I extracted the second bicuspid, but I did not think it was right for the good of the patient to do so.

Now, in regard to the question of depressing the teeth in their sockets. I know it can be done, but after years of observation I have come to the conclusion that it is better to grind off interfering front lower teeth than to run the risk of disturbing nutrition to the pulp by compression. It does no harm whatever to grind the ends of such teeth if it be done very carefully. If the teeth are sensitive to the grinding, it should be done a little at a time, with intervals of several weeks between. There need be no failure by this plan.

Dr. J. Bond Littig.—In regard to the question of extracting for regulating, I do not feel any hesitancy if I think that by extracting I can save the labor of spreading both arches and make a good result, even if mastication is not quite as good, because I think one has to take the patient into consideration. When I extract a tooth I expect that to give the best result to the patient in regard to the regulating of that case. There are always a great many ways in which one can regulate. One can spread the arch, making it very much larger than it ought to be, or can take out one or more teeth and accomplish the end with very little difficulty and annoyance to the patient.

Dr. Chas. O. Kimball.—I think we are indebted to Dr. Davenport for the exceedingly careful, broad and general paper he has given us to-night. It teaches us a great many things and covers the subject so generally and thoroughly as to suggest to our minds lines of thought in many different directions. I want to speak of a case in connection with the extraction of teeth for regulating. It is just such a case as Dr. Littig speaks of. The articulation is perfect in every respect, except that there is a crowded condition of the lower incisors. I made an articulated model of the case; and I wish to emphasize what Dr. Davenport has said regarding that. I do not see how even the simplest case can be studied intelligently without having carefully articulated models, so that the inner as well as the outer cusps may be seen to know exactly what one is dealing with. I took this model to a friend of mine who I knew was opposed to the extraction of teeth and said to him, "How would you regulate this case?" He said, "Really that is one of the cases where, if I ever wanted to extract, I think I should extract." I am going to do it to-morrow morning, removing a lower central incisor. The upper arch is very perfect. The teeth are small, and any broadening of the upper arch would probably leave spaces between them.

Dr. Gillette.—I prefer not to say very much, except that the suggestion that Dr. Davenport has in mind in speaking against extracting is the ideal condition that we would all like to attain; but many of us see cases where it would be entirely wrong to consider extracting, provided any reasonable amount of work and expense would bring about a better result; but that reasonable amount of work and expense is just one of the points that this difference of opinion hinges upon. We all of us see cases where much expense and much work for the individual is contraindicated, and we have to compromise. In theory I agree entirely with what Dr. Davenport has said in regard to extraction. I dislike very much to extract a tooth in a case of regulating, and I do not do it if I can help it, yet I see cases where I feel forced to do it for the reasons that I have suggested.

Dr. E. A. Bogus.—I want to make my thanks to Dr. Davenport for his very judicious paper which is enough to set us all thinking, and to express my pleasure that so reasonable a presentation of our work can be made in so short a composition. At Dr. Farrar's mention about extraction and at the representation by one or two other gentlemen present of pretty strong notions in regard to extraction, I see a general cheer goes round, and incidentally one can easily pick out the men who do not believe in letting the natural teeth stay where they ought to be. But that cheer is not as general as it was a few years ago. There is a little light creeping in even to our heads, yours and mine too. As the old editor of the *Tribune* used to say, he would be very sorry if he could not change his mind, for that would show that he could not advance. Some of our brethren here have changed their minds. I am on record as being opposed to extraction, but I have extracted four or five firmly set teeth in the last dozen years. One of them was an upper incisor for a young lady twenty-eight years of age, and extracted for the purpose of regulating; but I do not think extraction is very often called for, as we are such short-sighted mortals that we do not know what is coming next, and unfortunately extraction takes place almost always for young people who are in process of development.

I want to bring up one case that to me was pregnant with all sorts of lessons. I had occasion to make a model of the mouth of a married lady in Paris, who one year presented herself to me for dental operation. I was interested enough to ask her where she had been previously. She said she had been to Dr. A. L. Northrup, but previous to that always to Dr. Clowes. He had taken charge of

her mouth from childhood. That model was shown to Dr. Clowes one day by Dr. Ives, whereupon Dr. Clowes declaimed against the treatment of that mouth in a manner to make one's hair stand on end. He said such a man was a swindler and a quack. I came up just then and said to him, "Oh, now, Dr. Clowes, might not this case have been treated in exact accord with your ideas and teachings in regard to dental gardening?" He said, "Never was such a thing possible; the man who did this extracting was evidently perfectly ignorant or thoroughly dishonest." I finally told him that he was the man. Unquestionably he had done it with sincere and honest motives, but he had not taken into account the changes that are inevitable with passing years. This case would illustrate many others. My two thousand models will tell the story in a way that no words of mine could approach.

Now, Dr. Farrar says that the first thing we have to do in contemplating a case for regulating is to consider comeliness. A gentleman in Chicago, who is unquestionably skilful as a man who can regulate dreadful deformities, told me that he knew nothing about occlusion. That question had never presented itself to him. He thought of nothing but appearances. I then said to him, "Do you ever stop to think what happens in later years?" "No, I have thought of appearances, and that only." I am free to confess, gentlemen, that it is well to have the line laid down sharply, and this gentleman's answer was honest. Dr. Farrar says the next thing is mastication, and then that we want to be generally beneficial to our patients. Dr. Farrar's remark in this regard is perfect, and we all say, "Amen." But perhaps we do not all say "amen" to the idea that we can have an improvement in mastication when we go to work and remove certain cogs from one of two cog-wheels which play into each other, and perhaps we do not think that President Roosevelt, with all his teeth, is so very deficient in personal appearance. To be sure he shows his teeth the moment he speaks, but I think he would be a man of less force if he had less teeth. You will remember what Dr. Hopkins truly said the other night, that strong men have generally good teeth. He instanced George Washington as the exception. I don't think he spoke of Queen Victoria, but it might be suggested that tartar had something to do with the loss of both these sets of teeth. Going back to Dr. Farrar, it seems to me that he did not lay stress enough upon the development which takes place between six and twenty-six years of age. There is a very big difference when we examine the jaws of Saint Peter when

he was six years old and when he was sixty, and the guides in certain European cities claim to be able to show both.

He also spoke of Dr. Davenport widening the arch and throwing the teeth all out of gear. I have known Dr. Farrar a good many years, and too well to believe that he meant that remark to refer to all men who undertake orthodontia. While a few may throw their teeth out farther than they want to, that is not the idea that I understand Dr. Davenport wishes to convey at all, but I do understand him to say that he would, as a rule, widen and enlarge most irregular arches, and by that process he would gain the room necessary to bring the irregular teeth into their proper position, and in this he is perfectly right. Now, in illustration of what comes of a careful examination of mouths without models, I want to instance a case that came before Dr. Moffatt, and we are not any of us going to claim that Dr. Moffatt was not an expert practitioner. A son of General Keyes (you see I mention names) came into his hands, and he said to me one morning, "I have ordered out two lower molars, and the patient is coming in to-morrow morning to have them out, and as he originally was sent to you, you must take them out." When the boy came in, instead of extracting the teeth, I took an impression of the jaws, and told him that Dr. Moffatt and I would have to talk the matter over first. I went in to Dr. Moffatt holding the models in my hand and said not a word. He took hold of my wrist, and after turning the models from side to side, said, "By George, Bogue, that boy's mouth would have been ruined if we had taken those teeth out." I might tell almost the same story about one gentleman whom I respect very highly, and who is now in the room. When he saw the casts he recognized the condition. Without the casts he could not, looking as carefully as he might. A great deal of what he could see was from the posterior side of the models, alluded to by Dr. Kimball.

Dr. Farrar also says that no tooth is so valuable as the first molar for anchorage. Here I wanted to pat him on the back and say, "Bravo!" Now I would like to ask another question. "How about the first molar for the support of the jaws during the eruption of the permanent teeth and the shedding of the temporary teeth? Are they not just as valuable for that?" Then Dr. Farrar almost immediately speaks about extracting a tooth because it was dead. Now, another story. I spoke of this case in Boston, and some one spoke of a perfect articulation after extracting, and I offered five hundred dollars for the models of such a case. The

last letter I got came from a lady dentist in Texas. She sent her models and I criticized them carefully, pointing out the imperfections that existed. The occlusion never can be perfect after one tooth has been taken out. The case I alluded to is that of a young lady fifteen years of age, the daughter of the Russian foreign minister. When she came to me the four first molars were all in such shape that ordinarily, as dentistry goes, they would have required extracting. Of the two upper ones, one had an exposed pulp and the other was so badly decayed that the pulp was nearly exposed. The left lower molar was so badly decayed that the roots were separated and an abscess had been going on for some time, and the right lower molar had dead pulp and an abscess. I took my models, as Dr. Davenport advises, and carefully considered the case. I said, "If I extract these teeth now, bad as they are, the permanent teeth behind them will come forward, the occlusion will be lost, and she will never be able to masticate properly. I will run the risk of doing what I believe is the right thing to do." I treated the exposed pulps and healed the abscesses, and the roots were filled. I put screws into the roots of the lower left molar where the roots were separated, covered the exposed gum with gutta-percha, put a ring around it, and filled the whole thing with amalgam. The young lady came to me three years and then married and went to a distant part of Russia, but I have heard from her every year since. She has gained in health, and has a family. Her husband is the governor of the province where they live. That was twelve or thirteen years ago, and she has all those teeth yet, and during all this time has had good masticating surfaces. If she now loses all of these teeth, I feel that I have done her a great service, more than I could have done her by any extraction possible.

I hope Dr. Farrar will forgive me for constantly alluding to him. He is so very interesting that I cannot help it. He made the remark that if we extract the first molar, the second molar is liable to move forward. Then I was ashamed of him. Dr. Farrar, a man who teaches us all, to say it is *liable*. It is absolutely *sure* to throw the second molar forward, and the other results due to the throwing of that molar forward are great or little according to circumstances. He also alluded to the shortening of teeth by grinding the ends off. I may say that I have shortened a good many teeth by pressure and I have yet to see the second tooth that has died during the process of regulation. Once in my life I

found an upper central incisor dead after I had regulated a set of teeth, from what cause I do not know. I would heartily commend this suggestion of Dr. Davenport. A reason for extracting which is often the rule (I hope not by members of this Institute) was given by a gentleman practising our calling on the other side of the water, to whom I had once sent a patient with a regulating fixture in the mouth. He said to me, "Why do you put such a fixture as that on that girl's teeth? Why don't you extract the four first molars and have done with it? If you extract you get your fee, and they don't know the difference and you are better off."

Dr. Farrar.—It is certainly evident from the remarks of Dr. Bogue that I either made a mistake in forming my language or he made a mistake in hearing it. I am not here to criticise adversely any member's methods. What I said I will scientifically adhere to.

So far as the essayist's plans go they are practicable, even excellent. So far as the "Coffin plate" is concerned, if properly made it will do the work, and I can recommend it to a certain extent, but I do not regard the mechanism equal to some that have been devised more recently.

The remark has been made that an inventor gets into a groove. This is a new idea to me. I had always thought that it was the man who has little or no inventive ability, but who follows in the footsteps of another, who gets into a groove. Of course, the inventor who has but one idea and can see nothing else may be, and generally is, a "groove man."

So far as Dr. Bogue's criticisms are concerned, I do not mind them at all. Nothing would please me more than to reply to questions by the hour, for I am full of this subject.

Concerning permanent molars, I do not extract them unless they are dead and badly decayed. In the case I referred to this was so. But it is a wrong idea that proper antagonism cannot be made after a tooth has been extracted. As much harm can be done to antagonism by improper widening of the arch as by improper extracting.

Dr. C. F. Eames.—I have been much interested in the valuable suggestions made by the essayist, and I do not regret having made the trip from Boston for the sole purpose of hearing his paper.

In regard to the removal of teeth for purposes of regulating, I am not sure that I understand exactly where Dr. Bogue would

draw the line. I must say that I have had cases which seemed to me to call for extraction, but these are exceptions to my general rule of practice. In these cases there was deficient development of all the bones of the face, especially in the lateral direction; what might be called a very thin face.

I have seen deformity result from widening the arch in such cases, that is to say, the teeth are unduly prominent and out of proportion with the rest of the face, which has not been affected to any appreciable extent by the operations on the dental arch.

I have, on the other hand, obtained very good results in such cases by extracting the four second bicuspid and then proceeding to regulate.

Dr. Davenport.—This question of extraction I do not intend to make at all prominent in the paper and I am in a sense disappointed that it should have been made so much of in the discussion. While I do believe in expanding arches, I do not think patients are discharged from my office, after the completion of the regulating, with arches that are too prominent for the comeliness that, as Dr. Farrar says, is so essential. If expanded arches would not agree with the proper contour and expression of the face, then of course some other method must be taken, but I think I put enough emphasis upon that point when I spoke of the study of the casts and the face together, and the necessity of making our work conform with the needed expression. I do not take the extreme position that teeth should never be extracted, and I am perfectly willing that Dr. Littig or Dr. Farrar, or any other man with judgment, should extract teeth when they believe it necessary, as I feel sure that they would do no injury by such decision, but all men, and particularly the younger men who are forming their ideas and habits, have not the experience and judgment of those I have named and therefore it is well that a word of caution should be spoken. I can remember twenty years ago when the extraction of the sixth year molars was the panacea for all cases that needed regulation, and casts were seldom taken except where an appliance was to be made. A hasty glance at the mouth and, "Oh, extract the sixth year molars." I think we ought to be very careful in advising the extraction of teeth, and only in extreme cases will it be found necessary.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, February 25, 1902, the President, Dr. S. B. Luckie, in the chair. A paper entitled "A Peculiar Case of Resorption," written by Dr. Louis Jack, was read by Dr. Charles Jack.

(For Dr. Jack's paper, see page 633.)

DISCUSSION.

Dr. E. T. Darby.—I would say, Mr. President, that Dr. Jack very kindly sent for me to examine this case just prior to filling it. The case was an exceedingly interesting one. It looked, when I first saw it, like a cavity of decay minus any decay. It was irregular in shape and presented the appearance of cavities that we see on labial and buccal surfaces, except that the tooth was white and the dentine was perfectly hard, and there was no indication whatever of a carious condition. I did not see it until after Dr. Jack had pressed the gum-tissue away with cotton. He removed that, and there was a little hemorrhage, which was easily controlled, and then after washing the cavity thoroughly I had a nice opportunity of exploring it, which I did with instruments, by aid of the electric light. It was undoubtedly a very unusual case of resorption. There could not be any possibility of mistaking it, and I do not remember having seen another like it. The doctor said to me that when he first saw the case he supposed that it was a deposit of serumal calculus beneath the gum. When he came to examine it he found the dark zone of discoloration was the cavity itself with the gum-tissue filling in.

It was a set of very beautiful teeth, and the lady took exquisite care of them; there was no indication of calculus on any of the teeth, and a deposit of serumal calculus there would have been very much out of place in her mouth.

Dr. E. C. Kirk.—I would like to know whether, before this gum-tissue was pressed aside, there was any relation of the gum-tissue to that cavity, filling in the cavity, or whether a mould was made of the eroded cavity. Have you any data on that point?

Dr. Charles Jack.—Yes. The gum-tissue apparently filled a portion of the cavity, as Dr. Darby has stated, but it did not entirely

conform to it. There was quite a shelf of enamel over the gingival cavity.

Dr. Kirk.—Some years ago a young girl, about fifteen years of age, came to me for dental care, and in examining her mouth I found a gum festoon between the lateral and central incisors of the upper right side hypertrophied and showing indications of hyperæmia. Her teeth were free from caries. In making the examination I turned up a little flap of gum and found a condition which was similar to the one described by Dr. Jack. The little festoon of gum seemed to have embedded itself in the tooth-structure. It had not only brought about an erosion of the relatively soft tissues of the tooth,—*i.e.*, cementum and dentine,—but also of the enamel; it was erosion of the enamel. There was absolutely no residue by carious action in the cavity. I simply regarded it as a resorption of the hard structures of the tooth due to the action of giant-cells or some disordered glandular structure in the little festoon of gum, which was evidently diseased.

We need, I think, a very careful research into the histology of the gingival margin, though some important work has been done by Dr. Black and others. The exact nature of the epithelial structures has not been clearly made out. They have been designated by Dr. Black as glands; they do have something of a glandular structure, but that has been disputed. Dr. Noyes has published something following Dr. Black on this question, but the interesting point in relation to these epithelial cells is that they become the seat of pathological activity, so to speak, and seem to develop a condition which makes it possible for them to excrete an acid fluid. It may be a glandular secretion, or an alteration of the cellular structure, whereby the equivalent of the osteoclast, or giant-cell, is produced. This has a solvent action due to some erosive liquid emitted at the point of contact. We find that type of tissue at the apices of roots in cases of long-continued irritation of the pericementum; we find it at the ends of long bones in gout, or at various other places in the body where there is an irritant to set up a proliferation of leucocytes, which seem to be diverted from their normal function and develop into the multinuclear cells. This case of resorption is the result of a slight irritation of some character, probably situated in the little epithelial structures to which I have referred, and in which the epithelial cells themselves, or the surrounding tissue-cells, have become abnormally developed into the

so-called osteoclast and a solvent fluid has been secreted at that point dissolving the tooth-structure.

Dr. O. E. Inglis.—At the November meeting I had the pleasure of mentioning a case of a patient in whose mouth four lower incisors had resorbed in a way somewhat similar to that described by Dr. Jack. In that case, however, the resorption was due to a deposit of calculus, which in all probability produced the primary irritation, which eventually brought about a growth of tissue similar to granulation tissue, and that in turn produced a resorption of the roots, not only on the lingual surface, but on the proximal surface.

A specimen was exhibited by Dr. Fellows at that same meeting which I thought had great interest in this connection, because of the fact that it was an exceedingly rare specimen. It may be of interest if I re-describe it. It was a central incisor taken from the mouth of a lady sixty years of age. This central incisor evidently had had a large deposit of secondary dentine in the pulp-canal as the result of age, and that secondary dentine, after resorption of the original dentine, remained in position. The entire apical half of the root was resorbed and the cervical half was entirely hollowed out by the resorbent papilla in such a manner that the cementum completely encircled the area of resorption, while in the centre a column of secondary dentine projected from the pulp-cavity of the crown to the height of the cementum edge. While resorption is often irregular in its action, this case would seem to indicate a superior resistance to acids in cementum and secondary dentine.

Dr. James Truman.—My view of the matter is that it is simply a case of erosion. I cannot understand how anything else could accomplish it. I have seen cases not exactly like this, but somewhat similar. I believe it is an external matter entirely. I do not recall whether or not Dr. Darby said that this case had the characteristics of erosion. If it had it could hardly be called a resorption.

Dr. Darby.—It was not like any case of erosion I have ever seen. There was no polish and the surface of the cavity was irregular.

Dr. Charles Jack.—The cavity was entirely beneath the gingival margin. You could put an explorer into it, but to do that you would have to lift up the soft parts. With a mouth-mirror alone you would not suspect it.

Dr. Kirk.—Could a probe be carried beyond the upper margin of the cavity?

Dr. Charles Jack.—No; it stopped there.

Dr. Kirk.—I would like to say a word on the question of the polish. That is an important part, and we may go astray on it. I believe that this is distinctly an erosive process, but not a case of erosion in the sense in which we generally apply that term.

Now, the question of the polish in the cavity, as to whether it is erosion or whether it is not erosion, is a misleading feature, for whether we have it or not depends upon two things,—the nature of the solvent which is at work and the character of the tooth-structure on which it acts. If we have a solvent action going on very slowly upon a dense tooth-structure, we will have a fine polish. But if we have a rapid acid action upon a tooth-structure not so dense, we have not the polished surface, but one which is more or less chalky in character. It is a clinical manifestation, simply due to the character of tooth-structure and the solvent at work. We have erosion of teeth produced by a variety of solvents and modified by a variety of tooth-structures, and yet they are essentially all erosive processes.

Dr. Inglis.—I would like to ask Dr. Kirk whether he would not regard the position in which these hard tissues are being dissolved as having much to do with the presence or absence of polish? Coronal erosions are subject to the abrasive action of the lip, brush, food, saliva currents, etc., which may remove the soluble products of the reaction between the acid from the labial glands and the tooth-structure; whereas, in a place like this, we find in contact with the cavity surface only soft tissue which is quiescent; that is to say, it does not in any way abrade the tooth surface.

Dr. Joseph Head.—I might perhaps make some remarks on that subject which would be germane. I was in Chicago last Saturday, and Dr. Black was showing me through the clinic-room and museum, and he showed me specimens of highly polished proximal erosion in which the labial and platine surfaces were perfectly intact. It was a remarkable fact, and I thought it would be germane.

Dr. Kirk.—I have made a study of erosions in many ways for a number of years, and I think we have been misled in regarding this disease as in any way affected by mechanical abrasion. It is entirely a distinct disease produced by a different cause. The

question of attrition or mechanical abrasion has nothing whatever to do with the character of appearances we see in the true chemical erosion of the teeth or with the nature of the polish. Dr. Head has given a very pointed illustration of the fact where the disorder occurred on the proximal surface of the teeth, and where the polish was characteristic of ordinary erosion.

Dr. Jeffries.—Would it be in order to speak of a case of resorption of a permanent root from the contact of the crown of an impacted tooth with it? I have here a specimen of a bicuspid tooth, showing resorption of the root in a manner somewhat similar to that occurring in a deciduous tooth, and caused by the contact of the crown of a supernumerary impacted in the jaw, at right angles with the root. The resorption has caused an exposure of the pulp. (Tooth exhibited.)

I may also state, while the tooth is being exhibited, that I have in my pocket a specimen of the teeth of some Cliff Dwellers of Colorado. They are, of course, anywhere from a thousand to two or three thousand years old. If the members care to look at them, they are at their service. (Teeth exhibited.)

Dr. Charles Jack.—The tooth in question was an upper central incisor. The case has completely recovered. The temperature-rate is normal, and the gum has lost all appearance of inflammation, and is now in a normal condition. The question of pulp irritation is the principal one, but the pulp is evidently now in a normal condition.

The President.—The next order of business is casual communications and incidents of practice.

Dr. Inglis.—It may be of interest, in connection with incidents of practice, and perhaps in connection with this case, inasmuch as it was filled with "archite," to speak of this new cement. I would like to say that at the time the "archite" people sent me the sample I immersed it in strong ammonia and twenty per cent. lactic acid. That was done in the early part of January, about six weeks ago. At the present time there is no disintegration of the "archite." I sent for a box of it at the same time and put a sample, mixed by myself, in the test-fluids, and there has been no change whatever in either of these samples. A day or so afterwards I made two mixes of Harvard zinc phosphate, and allowed them to set for twenty-four hours, then placed them in the same fluids. In twenty-four or

forty-eight hours they had both disintegrated. I simply mention that as corroborating their tests.¹

Dr. Charles Jack.—I have tested several different samples of it in acid, ammonia, and water, and I find very little change in any of them. The surface does become roughened, but after polishing away the roughened surface caused by the action of the different fluids and then putting it back I find it does not change. In one case I had it soften very much and to quite a depth, but in all the others—about a dozen—I did not find any change. I have heard from several gentlemen that the different samples differ very much.²

Dr. H. Roberts.—I tested a sample sent me on a card. I simply dropped it in a bottle of water, and it did not seem to disintegrate as a powder in the bottom of the bottle. When received, it was as hard as anything could possibly be, and be of a composite nature, but after being in the water a short time I could scratch it down; it was considerably harder than chalk, but did not approach any of the phosphate cements in hardness. That was the only sample I experimented with. While it might stand the alkali and acid test, it will not stand the test of Schuylkill water, which test I made.

Dr. S. H. Guilford.—I had a little experience with "archite." I received a box when it was first put out, and though I did not fill many teeth with it, I did fill a few. Among other patients so treated was a young boy who had rather a large proximal cavity in an upper bicuspid, containing a disintegrated gutta-percha filling, which was placed a few years before. I replaced it with "archite." That was in December last. He was in the other day, and the cavity was practically empty. I never had anything dissolve out so quickly.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

¹ May 8, after four months, all the specimens are visibly affected by the test-fluids. One practical failure has returned.—O. E. D.

² Dr. Louis Jack subsequently reported the failure of the "archite" filling by displacement, the cause apparently being some change in the form of the "archite" at its margins. The cavity was afterwards filled with Fellowship amalgam, which remains in good condition, the tooth being comfortable.—EDITOR.

AMERICAN MEDICAL ASSOCIATION, SECTION ON
STOMATOLOGY.

(Continued from page 684.)

Dr. R. R. Andrews.—Had I known, when requested to write something about the embryology of the dental pulp, that Dr. Latham was preparing a paper upon the histology of the pulp, I doubt if I should have attempted to write. She can cover that subject so well. The embryology only goes a short distance towards perfect development. My idea was to give a description of the normal dental pulp.

(For Dr. Andrews's paper, see page 621.)

The following Nominating Committee was appointed: Dr. J. L. Williams, Boston; Dr. G. V. I. Brown, Milwaukee; Dr. F. A. Bogue, New York.

Discussion of the papers of Drs. Andrews and Latham was postponed to the morning session of June 11.

Adjourned to June 11, ten A.M.

Second Session, Wednesday, June 11, 1902.

The meeting was called to order by the chairman.

A paper entitled "Some Notes concerning Preparation of Teeth for Microscopic Study," was read by Dr. Martha Anderson, of Moline, Ill.

(For Dr. Anderson's paper, see page 588.)

DISCUSSION.

Dr. Vida A. Latham.—I would like to say that this work is going on with the work of Dr. Talbot to discover some ways of preparing the teeth that will give results superior to those already quoted. Those quoted are from general histologic work, and are inferior. A tooth that is decalcified has to lose some structure. If we lose the dental structure, we also lose the pulp structure. The nerve-fibres we do not fully understand. We have to be very cautious in making specimens; one batch will stain beautifully, the next not at all. Two pulp-stones passing through the same solution will have results entirely opposite. Even hæmatoxylon will not stain the same in two sections of pulp. We see so many pathological changes that we have been astonished with the different results. We have not yet

obtained a normal standard of pulp area. Our results bear out one or two of the results given in Professor Gysi's paper. We consider the importance of this structure equal to that of enamel and dentine. The peculiarity of the pulp lies in its blood supply. The term myxomatous tissue is in dispute. If we use that term we are out of the bounds of histology, because it is not normal tissue. The term analogue is complex. The term dentinal papilla is unsuitable.

Dr. Eugene S. Talbot.—I do not think it is possible to study the diseases of the teeth without first studying the evolution of the pulp. There is no structure in the human body that has undergone such a change as the dental pulp, and yet there is nothing taught in our dental schools regarding the matter, so far as I know. The dental pulp has reached its highest development in man before it commences to develop the dentine. From that time on the pulp recedes, and there is no question in my mind from the studies I have made that it becomes a degenerate organ from that period. I think that is the reason, as Dr. Latham said, we are unable to ascertain what a normal pulp is. I question, indeed, whether we have such a thing as a normal healthy pulp, and that, I believe, is the reason we are unable to get two slides or two specimens alike of the same pulp. I do not believe there is any structure in the human body like it in variety of histologic conditions.

Dr. William Knight.—It has occurred to me, in regard to injections into the capillaries, that the siphon method with a very dilute saline mixture would be very satisfactory. The vessels after being cleaned out become very lax, and afterwards such injections as are desired can be made. In that way we can get very fine capillary injections. I make this as a suggestion, and not as the result of practical work in histology. It works very beautifully in injecting the vessels of the mesentery.

Dr. M. L. Rhein.—The difficulty in securing a proper microscopic specimen of the pulp is one that confronts us continually, and I do not think the solution of the scientific treatment of the pulp will be solved except by microscopic preparation. Clinical experience has taught us empirically the solution of many mooted points, but there is much to be cleared up by pulp specimens under the microscope. I do not know of any one more competent to cope with the solution of this problem than Dr. Latham with all the ingenuity and skill she has given to the work.

Dr. H. H. Butterfield.—Coming in as the paper was nearly fin-

ished, I heard a statement regarding the pulp-stain, and I would like to ask the conclusion.

Dr. Latham (answering *Dr. Butterfield's* inquiry about the staining of the pulp-stones, reading from her paper.)—*Dr. Anderson* says the stones are stained dark brown as the nerves. If they are pulp-stones, why do they stain? We have used the teeth the moment they are extracted, and after they have been extracted for some time and are dry and mummified, and again, while still in the jaw. We have tried to collect some thousands of teeth to prepare by every possible method. Later we hope to tabulate these results. My paper yesterday was not a conclusion, but a statement of what others have said on the subject, showing the differences of opinion. This question on pulp-stones in *Dr. Anderson's* paper was brought out because I have said to her, "How is it you get the staining in the pulp-stones?" She said she did not know. I asked her to take these pulps and break them down, and she used almost every acid known, but without success. *Professor Black* says he can break them down. Some do not break down. If they do not break by any chemicals, what is the structure? One peculiarity in my photographs is that the nerve-fibres work something like this (diagram on board).

Another point is that the pulp-stones are more common in the apex. The trunk of a nerve-fibre coming down and the pulp being split makes a spiral formation around the pulp-stone. I have other specimens again where the nerve-fibres run up outside, following the fibre and avoiding the pulp-stone. Why do the nerve-tissues take the stain the same as the pulp-stones? One argument is that they are of nerve formation. This is as far as I have gone.

Dr. M. L. Rhein.—Do not the formative nerve-cell fibres take the stain?

Dr. Latham (in answer to *Dr. Rhein's* inquiry regarding the staining of formative nerve-cell fibres).—If I remember rightly, *Dr. Andrews* says formative fibres. He evades the question just as we all have done. They do not stain alike. Then, again, the matrix which is formed does not stain the same as the odontoblastic fibres. These are points about which I am almost in despair. If these are not normal teeth, then we do not want to work with them. If they are normal teeth, we want them. The matrix, as I understand, is possibly the connective-tissue material underneath the layer of odontoblasts. Why these pulp-stones take the stain of the

normal tissue is a big question. Dr. Paul makes the statement that the odontoblast is not a formative cell. Gentlemen like Dr. Andrews, who have made the study of the dentine a specialty, are better able than I, who am studying the formative pulp, to answer these questions. The origin of the odontoblastic cell I believe the key-note to the matter. I would be greatly obliged if any of you gentlemen can tell me who quoted the odontoblastic cell as a mesoblastic cell. Where that statement originated I do not know. We know that when a paper is first written it becomes altered by other journals publishing it. Each man who reads the paper draws his own conclusion; that is, he establishes his own theory. I would naturally make another paper fit with mine. It is a fault, but then it is done.

It seems to me that if we agree that the odontoblast is secretive and is a dentine-forming organ, we put it in the hypoblastic layer, because on analogy the glands of the stomach are first secretive. In the lower animals it is on the same basis. Then, if it secretes, it should belong to a secretive organ. We know that all the glands are hypoblastic. The date of the development of the odontoblastic layer I do not know.

Dr. R. R. Andrews.—The first formation of the dentine takes place in a mass of connective tissue when there is apparently nothing but the embryonic cells. There is a sort of gelatinous substance thrown out, and these same cells that were connective cells differentiate. They must be different from the connective cells because they were right in the midst of embryonic tissue. The only question is about the basic membrane.

Dr. Latham.—A new paper I have now seems to point out that they are nerve-tissue. If they are the terminal nerve-endings they cannot be connective tissue. The results of Morgenstern have not been reproduced by other investigators. In my research I hope by the improved technic to get the fibre into the cell, and in that way prove the point in dispute.

The Nominating Committee reported as follows: Dr. M. L. Rhein, New York, Chairman; Dr. Eugene S. Talbot, Secretary.

At this point the discussion of the papers of Drs. Andrews and Latham, postponed from the day before, was taken up.

(To be continued.)

Editorial.

ORGANIZATIONS, PRESENT AND FUTURE.

In the original department of this number will be found an interesting paper by Dr. William H. Trueman, on the "British Dental Association." It deserves careful reading by all those interested in national, State, and local dental societies, for it shows what a determined and united effort has accomplished for the good of the dental profession in Great Britain.

The contrast between this and our own poorly systematized management tends to reduce the egotistic idea that the average American can do things generally a trifle better than his cousin over the ocean. In the matter of organization the said American is yet, apparently, in his infancy, and the maturity of experience seems far away if we may judge by results and the indifference to the subject manifested throughout dental circles.

While it is true, as Dr. Trueman states, that geographical limitations may have much to do with the solidarity and progress of the dental fraternity in Great Britain, it certainly has not all to do with the great results attained. There must be something in the men themselves worthy as an example for us to follow. The question of training has, doubtless, much to do with it,—training as a class. This latter feeling is so sharply pronounced in England that it leads necessarily to a closer bond of union than could possibly exist in this country, where class distinctions have very little, if any, force. It is this individuality, every one for himself, that continually antagonizes effort to effect a professional unity in the United States. It is, perhaps, not desirable that this condition should be changed, for although class distinctions have an advantage in some directions, they are a bar to individual freedom, and to that extent make a general advancement along any line of work difficult.

With this national characteristic working against unity, it would seem impossible, upon a hasty view, to develop anything better out of the materials and conditions at hand; yet the situation

is not entirely hopeless. Those who have watched carefully the changes in the dental profession in the United States during the past fifty years can but feel that while we cannot reach our English brethren in unity of effort, we, with our larger domain and more extended difficulties, have made good progress towards this most desirable condition.

The question of organization has become a problem, and one requiring the best thought of serious minds. The solution is not one to be quickly thought out or quickly put in practice. The mental peculiarities must undergo a partial and radical change before anything of moment can be developed. It may be said, if this be so, why attempt any improvement? The answer must be that education alone can effect the result. All means should be resorted to to bring the intellectual forces of the American mind to see the importance of this subject, and while it may be long developing, there will come a time when the warped mentality will assume more perfect proportions.

To accomplish this strenuous efforts should be made use of to effect results. The literature of the dental profession must be established upon a true professional basis. It must be above and beyond commercial temptations and environment. It must be above all reproach, and hold the standard higher than those do who are supposed to be trained by it. It must lead, and never descend from its high estate to gratify degrading impulses. This is a high mission. Is it being fulfilled by the periodical literature of dentistry in America? The answer cannot be made here, but the fact remains that the great body of the twenty-five thousand dentists in the United States have not reached a standard of unity to be compared with that of England, Ireland, and Scotland, notwithstanding the fact that the organization of dental societies and colleges had their origin here. Who is mainly responsible for this? It seems to the writer that the solution of this problem constitutes the most important question now devolving upon the dentists of this country. Are we prepared to grasp it and meet its difficulties?

An important factor that has been a permanent bar to progress has been our methods of organization. This applies with variable force to all, local, State, and national societies, but especially so to the latter. What conclusion must be reached when it is remembered that from two to three hundred members of this body meet annually under the name of the National Dental Association, and

this out of twenty-five thousand dentists in the country? There can be but one answer, and that is that the body is non-representative and cannot possibly dominate the professional thought of the great mass. It is a serious question whether it has any marked influence for good in any direction. While numbers are not always important, for one may oftentimes "chase a thousand," still the small number that meet once a year, while good so far as it goes, indicates a state of mental torpor at large in dentistry that is anything but encouraging.

The American Dental Association and its successor, the National Dental Association, have each been founded upon a standard not higher than the level of mind they are supposed to represent. This has been from the beginning the fatal mistake. The teacher must be in advance of the pupil, the leader, of his followers. The National Association has followed the lead of the American and degenerated into a clique of permanent members. It has ceased to be representative, and while the farce is annually gone through with of electing representatives in State and local societies, these bodies are never informed officially of the proceedings of the superior body, nor are they permitted to have a bound copy of its proceedings. These are not to be secured by money and certainly never by love. The natural result is that no unity exists between these organizations. The National Association is to the average dental mind something apart and divorced from his immediate professional life. It meets once a year, and the members enjoy the reunion, but the effect upon the profession for good is an infinitesimal quantity; few know of its work and fewer still read its proceedings. If the plan of selling these to the highest bidder, and that to the exclusion of all other dental journals is, as the writer understands, now in force, the national body might with propriety resolve itself into a dental fraternity, with the usual initiation ceremony, grip, and passwords, for it will have ceased to be an open factor for good.

The association of the future, whenever formed, should combine liberality with conservatism, a not impossible combination. It should be representative in character, but representation should be based on recognized ability. Permanent membership should have no place in this body, nor would it be necessary. It should be so intimately related to subordinate associations that the latter would feel it to be a part of their professional possessions. The subordi-

nate bodies should financially aid the superior organization in proportion to their representation, and in that proportion should be entitled to copies of the proceedings. Details of such an organization cannot be worked up here, but it must be apparent that the present methods are a dead weight and can never lead to harmony of effort or to a standard of excellence worthy the efforts and individual progress made in this country.

The future promises two methods of national organization. One in which there should be a liberal representation in the national body. Instead of two or three hundred, there should be five thousand members. This would give an income sufficient to publish the proceedings and avoid the disgraceful method now prevailing. It should have a dental home, possibly in Washington, D. C., with a library worthy the name and with all the conveniences for reference and original research. The main body could, as now, meet East, West, and South, and perform the missionary work of interesting outlying and isolated sections. There seems no reason why, with good business methods, an income of fifty thousand dollars could not be secured. It means work, however, and intelligent methods. This is but the extension of older systems of organization in this and other countries.

There might be organized another, also representative, but the men and women who represent it should be adepts in original investigation. These should meet in national convention and lead the dental profession through the evidence of accomplished work. Such a body would be regarded with a respect not at present given to national organizations, for it would come to be recognized as the final arbiter on disputed questions.

That such an association will be formed in the near future is not probable, but the enlargement of the scope of work through present systems seems not only probable, but very possible of attainment, and its accomplishment should be considered as one of the important things in the next decade.

It is believed the time is nearly ripe for an organization representing all the best local societies of the country, and upon a basis that will satisfy the progressive ideas of the present century. To meet this want the work must cover the entire product of dentistry. Nothing too low or too high to be omitted. There is no organization now existing that meets this demand. Is there sufficient energy among the dentists of the country either to modify those

now existing, or, if that be not possible, to organize something that will meet all the conditions and elevate our calling to a place worthy the age and its recognized value as one of the beneficent professions?

Miscellany.

TO PRODUCE SPRING TEMPER IN SWISS BROACHES.—To draw Swiss broaches to a spring temper they should be placed on a steel, iron, or brass plate, one-eighth of an inch thick and about three inches square. This should be held by pliers or forceps over a spirit lamp, or Bunsen burner, and be kept continually moving over it, so as to keep the plate heated as uniformly as possible. The broaches should be watched very carefully, and when they become a pigeon-blue color they should be dropped into cold water.

AN OIL-STONE LUBRICANT.—For oil-stones use one part glycerin and two parts alcohol. It keeps the surface clean and sharp-gritted. Oil thickens by use and exposure, and gums the stone.—H. W. STEELE, *Items of Interest*.

CARVED SOLID CUSP FOR GOLD CROWNS.—At the clinic given at the Tri-State meeting held at Indianapolis Dr. J. E. Nyman demonstrated a very practical method of making solid cusps for shell crowns. It consisted of moulding the cusp in modelling compound to conform to the opposing tooth, then securing a mould in mouldine and casting a cusp of scrap gold. The results were good and artistic.—*Dental Review*.

INSTRUCTIONS FOR CONCENTRATING DIOXYGEN.—The Oakland Chemical Co. gives the following instructions for concentrating dioxygen:

“In a small, smooth porcelain dish or saucer pour about one ounce of dioxygen; then place it on a water-bath, or on a sand-

bath, or on the back of a stove where it will be subjected to a greater heat of not over 200° F., and cover the vessel with a piece of loose paper to protect the contents from dust. The solution slowly evaporates, and as the bulk decreases the strength increases. One ounce of a three per cent. solution evaporated to one-fourth of an ounce, which should be accomplished in from thirty to forty minutes, gives a remainder which will test about twelve per cent. This is generally strong enough for all purposes, but stronger solutions can be made by continuing the evaporation. This solution can be preserved for a considerable period in a loosely stoppered bottle, if not exposed to light.

"The advantage of this over other concentrated solutions of hydrogen dioxide is that the dentist never has to handle a dangerous product. When concentrated solutions are packed in tightly stoppered bottles, they frequently explode, and the accidents which have resulted from handling them are serious and numerous; with the above method, the solution is never in anything but an open or loosely stoppered bottle and no explosion is possible. The dentist can supply himself with small or large quantities on very short notice at less expense."

Current News.

AMERICAN SOCIETY OF ORTHODONTISTS.

THE second annual meeting of the American Society of Orthodontists, will be held at the Continental Hotel, Philadelphia, October 8, 9, and 10, 1902.

The following papers will be presented:

President's Address.

Normal and Pathological Anatomy of the Alveolar Process and Adjacent Tissue, M. H. Cryer.

Subject to be announced, Edward C. Kirk.

Art in Relation to Orthodontia, Edward H. Angle.

The Deformities of the Superior Maxilla from the Stand-Point of the Rhinologist, C. H. Kohler.

The Causes of Malocclusion, Wm. J. Brady.

Retrusion of Both Jaws with a Single Appliance, R. Ottolengui.

Nasal Occlusion and Septal Deviation in their Relation to Antral Development and Facial Expression, Royal S. Copeland.

Orthodontia from the Stand-Point of a Student, Anna Hopkins.

Distal Movement of Molars and Bicuspids limiting Extraction, Lloyd S. Lourie.

Stationary and Removable Appliances, Alone and in Combination, H. A. Pullen.

Subjects to be announced, W. Booth Pearsall, J. Humphries, J. E. Grevers.

Time will be reserved for the consideration of specimens, pertaining to orthodontia, which any one may care to present. A cordial invitation is extended to the profession.

MILTON T. WATSON,

Secretary.

270 WOODWARD AVENUE, DETROIT.

NEW JERSEY STATE BOARD OF DENTAL EXAMINERS.

THE New Jersey State Board of Dental Examiners will hold their fall examinations on Tuesday, October 21, Wednesday, 22, and Thursday, 23, at 9.30 A.M.

Further information may be had of

J. ALLEN OSMUN,

Secretary.

588 BROAD STREET, NEWARK, N. J.

NORTHEASTERN DENTAL ASSOCIATION.

THE eighth annual meeting of the Northeastern Dental Association will convene in the City of Worcester, Mass., October 15, 1902, and continue through October 17. This meeting promises to be better than its predecessors in essays, clinics, and exhibits. Invitation is extended to New England dentists, members of their respective State Dental Societies, to attend and join the Association. Remember the dates. One and one-third fares, certificate plan, on all railroads.

EDGAR O. KINSMAN,

Secretary.

TENNESSEE DENTAL ASSOCIATION.

THE thirty-fifth annual meeting of the Tennessee Dental Association was held at Mount Eagle, Tenn., July 8, 9, and 10, Dr. J. T. Meadors, presiding.

Thoughtful papers, heated discussions, interesting clinics, a pleasant place of meeting, and a good attendance made this one of the most interesting meetings held for several years. Six new members were added to the roll, and several absentees sent in their dues, thus showing an increased interest in association work.

A committee was appointed and a fund appropriated to co-operate with other societies in the matter of securing aid from the Carnegie Institute at Washington, D. C., to assist in scientific research along certain lines of special interest to the profession.

The following officers were chosen for the ensuing year:

President, Dr. W. K. Slater, Knoxville, Tenn.; First Vice-President, Dr. R. Boyd Bogle, Nashville, Tenn.; Second Vice-President, Dr. W. P. Menzies, Dyersburg, Tenn.; Recording Secretary, Dr. A. S. Page, Columbia, Tenn.; Corresponding Secretary, Dr. J. T. Meadors, Columbia, Tenn.; Treasurer, Dr. J. D. Towner, Pulaski, Tenn.

Executive Committee.—Dr. J. W. Peete, Memphis, Tenn., Chairman; Dr. A. R. Melendy, Knoxville, Tenn.; Dr. Jno. R. Beach, Clarksville, Tenn.

Chattanooga, Tenn., was chosen as the next place of meeting, and the date left with the Executive Committee.

A. S. PAGE,
Secretary.

UNION MEETING OF THE SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF NEW YORK.

THERE will be a union meeting of the Seventh and Eighth District Dental Societies of New York in Buffalo, October 28 and 29, 1902.

The Business Committee is sparing no effort to make this meeting a success.

B. W. WHIPPLE,
Recording Secretary.

THE International Dental Journal.

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No. 11.

Original Communications.¹

THE VALUE OF CATAPHORESIS.²

BY LOUIS JACK, D.D.S., PHILADELPHIA.

WHEN this subject was proposed at a previous meeting of this Academy, it was for the purpose of having the subject discussed in order to show the class of cases where cataphoric action is not required for the relief of dentinal sensitivity, and to determine where it is demanded. A further motive held in view is to promote the wider use of this beneficent means of relieving exquisite pain.

Before opening the subject in its practical relations, a summary or historical statement concerning the electrical diffusion of medicaments may be of interest.

The first investigator in this direction was Dr. B. W. Richardson, of London, who published two articles on Voltaic Narcotism in 1859. His experiments were conducted with aconite in combination with chloroform. With the aid of this combination he performed a series of successful operations, among them the extraction of five teeth. Here he applied a fine wire anode placed around

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Academy of Stomatology, Philadelphia, March 25, 1902.

the teeth and wound with cotton soaked in the above mixture, complete anæsthesia taking place in five minutes. Richardson met with intense opposition on the part of his medical *confrères*, for various reasons. He subsequently abandoned further experimentation, the development of general anæsthesia probably removing the incentive for further pursuit.

The subject remained dormant for over twenty-five years, when it was revived by Wagner, in 1886. Reynolds commenced to use cocaine in this way in 1887. Peterson began a series of interesting and conclusive experiments in 1888. In its application to dentistry the first published paper to appear was by B. F. McGrath, in 1888. Westlake read a paper before the New York State Dental Society in 1892, he claiming successful applications.

In 1895 Dr. Gillette presented before the American Dental Association an article containing explicit directions with relation to satisfactory experiments and description of operations, which enlisted immediate and general attention to the subject. It must be held that by his efforts this method of treatment was placed on a reliable basis.

Subsequently, in various papers, Dr. Price has demonstrated the scientific elements of this interesting procedure.

My experiments commenced in the early part of 1896, in which I followed the methods as disclosed by Dr. Gillette, but with a different apparatus. From that time to the present it has been in my hands a most reliable and certain means of giving relief in acute dentinal sensitivity. During this period I have administered this means over two hundred and sixty times, mostly in acute conditions. The result has been satisfactory, which I largely attribute to the apparatus I have employed,—namely, the dry cell chloride of silver battery, with an ampèremeter to measure the current strength, and the Willms controller to regulate the pressure to the varying degree of electric irritation presented.

The controller I first had in use was of one hundred thousand ohms at its greatest resistance. This was found in many cases to be insufficient. On the substitution of one of nominally four hundred thousand ohms the management of cases became extremely satisfactory. This individual controller, on being tested by Mr. Schramm, of the University of Pennsylvania, showed, at 70° F., at the first contact point a resistance of five hundred and eighty-nine thousand ohms. This degree of resistance with fifteen volts

pressure is not extreme, as in a couple of cases of persons very susceptible to electrical irritation slight shock was manifest at the first contact point.

The apparatus here shown has been in use since April of 1896 without replenishment of the batteries or any repairs.

The cases where there is no need for the use of cataphoresis, as I would define them, are those of subacute sensitivity, when carbolic acid in combination with oil of cloves or caustic potash, or desiccation by heated air, will give relief. There are, however, many instances when sensitivity is so extreme that none of these means furnishes more than slight benefit. These compose the class of cases where, to excavate and shape the cavities, zinc chloride or general anæsthesia would be required. Zinc chloride generally is painful, is only applicable to shallow cavities, and should not be applied to the front teeth under any circumstances. Anæsthesia by ether is troublesome and questionable, except the person is sufficiently intelligent and sensible; therefore, when the permanent treatment of caries is necessary there is in my judgment no choice in the class under consideration outside of cataphoresis.

There are few persons who can in extreme sensitivity of dentine permit the careful preparation of cavities even after the slight modification which may be effected by the escharotics or by desiccation. These do not act deeply enough to be sufficiently effective.

It should be borne in mind that as an accompaniment of extreme dentinal sensitivity there nearly always exists high nervous irritability, which interdicts the infliction of pain. Here the simple requirements of human sympathy necessitate the avoidance of the consequences of operating without profound local anæsthesia.

The condition of the tooth after complete anæsthesia by cocaine cataphoresis enables the formation of the cavity to proceed without hinderance, and, except inconvenience of the situation may occur, the patient offers no resistance to the pursuit of the requirements of the case in hand. Furthermore, the nervous system of the patient escapes the strain otherwise imparted.

The effect of subjecting some persons to acute dental pain occasions shock, not apparent at the moment, but afterwards becomes manifest by the depression which follows the suffering.

It must be considered that too large a proportion of operative procedures are inefficiently carried out because of the inability of the patient to endure proper extension of the cutting and the forma-

tion necessary to secure sufficient retention. In some connection with this consideration is the effect produced upon the nervous force of the operator who endeavors to carry out these requirements without using the most efficient means of subduing acute sensitivity.

The objection has frequently been made of the time required to secure anæsthesia in this manner. This loss is more apparent than real, as, in the instances where cataphoric action is required, there is a real gain of time secured by the completion of the cases; whereas, with inefficient obtundation temporary fillings have to be inserted, thus indefinitely deferring permanent treatment.

Fortunately for operator and patient, the proportion of cases of acute dentinal sensitivity is small in comparison with those causing slight and moderate pain, but in my view, and from the results following cataphoresis, I have no question concerning the benefit in every respect following its use.

For the reasons herein given I am disposed to urge upon my colleagues to consider the subject anew, that the results of this benign mode of treatment may be further extended.

NOTE.—Much valuable information on the general subject of cataphoresis will be found in the "International System of Electro-Therapeutics," chaps. i.; xx., by Frederick Peterson. The papers by Dr. Price in the various dental journals within the past four years will repay careful study.

AMPUTATION OF THE PALATAL ROOTS OF SUPERIOR FIRST MOLARS FOR THE PREVENTION OF ANTRAL ABSCESSSES.¹

BY ISIDORE LETT, D.D.S., BOSTON, MASS.

ONE of the disagreeable cases which dentists are called upon to treat surgically is a purulent secretion in the antrum of Highmore. These conditions are frequently met with, and whereas formerly most cases were sent to general surgeons, now it is the work for advanced dentists.

¹ Read before the American Academy of Dental Science, Boston, Mass., May 7, 1902.

You all being familiar with the anatomy of the maxillary bones and antrum, I will proceed to give details of a treatment for preventing an antral abscess, caused by mephitic gases from a putrescent pulp passing through the apical foramen of palatal roots of superior first and second molar teeth which perforate the wall of the antrum. There has been very little written on this subject, if any at all. It is not an uncommon occurrence in cleansing out the palatal root to be able to pass the probe through the apical foramen into the antrum. In such cases in which the pulp had been devitalized by the dentist, or from other causes, before putrefaction has caused the mephitic gases to pass into the antrum, I should certainly not amputate such a root, but simply treat it as any ordinary case, but when it is a case of an old putrescent pulp, an enlarged apical foramen, allowing a small broach to pass easily through it, I should recommend the amputation of such a root. The palatal roots of second molars have been found to perforate the wall of the antrum. Personally, I have not met with such a case. It is advisable, when we find on examination a putrescent pulp in a first or second molar, to probe very carefully into the palatal root, for if we were to pass the broach up carelessly, it may happen to be one of those cases previously described, and possibly force some septic matter directly into the antrum. I usually begin by opening the buccal roots and disinfecting them, then proceed on the palatal root by first opening the mouth of the canal with a rose bur (S. S. White's No. 5 to No. 8), then approaching the apex by frequently and carefully removing the deleterious matter with the broach and syringe. If the apical foramen is of normal size, I leave it alone, but, on the contrary, should the broach pass through, then I probe to ascertain if there is an opening through into the antrum.

I will now give you the results of three operations, two being successful, and one, being quite complicated, a failure. In the fall of 1897 a patient was sent to me to have a bridge for the superior right side. The two bicuspid and second and third molars had been extracted. The first molar was badly decayed and contained a putrescent pulp. After cleansing out the cavity and pulp-chamber I opened the buccal roots and then the palatal. The broach passed through the apical foramen into the antrum. On withdrawal of the broach I found a thick, creamy, purulent substance closely resembling pus. The amount was too small to pass judgment on. I opened the apical foramen so as to admit the broach

with a little cotton twisted on the end. This had more of that substance, which had a decided disagreeable odor, and was probably pus. Having only this tooth to depend upon for the bridge, something desperate had to be done, to try and save the molar. Amputation of the root suggested itself to me, and I proceeded at once to perform the operation. As before stated, all the root-canals having been opened, I disinfected and filled the two buccal roots, gutta-percha being used for root-filling. The mouth of the palatal canal being previously enlarged, I cleansed, dried, and sealed it with a pellet of temporary stopping. With a large wheel bur I cut a circular groove around the interior of the root below the bifurcation, and followed this up with a small fissure bur in a right angle attachment, until the root was separated from the crown. Before removing the root cotton was packed into the fissure to prevent the blood from oozing into the crown cavity, also to act as a wall to allow the amalgam to be firmly packed and make a serviceable filling. The removal of the root was accomplished by making a vertical incision through the soft tissues from about the middle of the length of the root to the free margin of the gum. After gently forcing the tissues back, the alveolar process was removed with the engine, giving a good exposure. Then introducing a flat-bladed elevator into the fissure (the cotton having been removed), and pressing downward, the amputated end was forced out sufficiently to be grasped and removed with a pair of small forceps. The opening into the antrum was enlarged and a fifty per cent. solution of phenol-sodique was used to wash the antrum. I kept the treatment up for several weeks and then removed the packing and allowed the alveolus to fill with granulations from the floor of the antrum up. This is done by decreasing the size of the gauze dressing at each visit. Should the dressing be discontinued immediately after the last washing out of the antrum, the granulations will not be as firm and solid. I saw this case frequently for three months, then unfortunately, the patient being called away, I lost all trace of him. The tooth was apparently as solid as it ever had been.

Another case was as successfully treated as the previous one, with the exception that the antrum was syringed out only once and granulations allowed to close the sinus.

There is always some particular case which will not give us the desired satisfactory results. An operation, or experiment, should not be discouraged or condemned because of a failure of the first

case. The failure may be due to some abnormal condition, such as malformation and fused roots, or a poor physical condition, anæmia, or the presence of some specific disease, congenital or acquired, such as scrofulosis or syphilis. Under those conditions I should advise the abandoning of the operation. A dentist should always take into consideration the physical and mental condition of a patient. If it is not satisfactory to him a course of treatment should be suggested either by him, or, preferably, by the patient's physician, to bring up the vitality. I had a very interesting and complicated case several months ago, with unsatisfactory results.

Mr. A., about twenty-eight years of age, presented himself in my office, complaining of severe pain in the superior right maxillary bone, and soreness over the first and third molar teeth. (The second molar had been extracted early in life, allowing the third molar to occupy its former place.) Periodontitis was evident in both molars. It was much more severe in the third molar. It had a large cement filling over a capped pulp. The pulp capping was unsuccessful. The crown resembled a bicuspid in shape and size. It was impossible to open the canals. I advised extraction, which was done. The roots were solidly fused together, having the appearance of a single thick root. The apex had been slightly broken down by caries. The next day the patient returned with no pain in the region of the third molar, but, as he expressed it, "the symptoms had moved from the extracted tooth to the other." This molar had been treated and filled some time before. There was very little of the walls remaining. I removed the large filling and opened up the pulp-chamber to the canals. The meso-buccal canal was normal. The disto-buccal canal could not be opened to the apex. There appeared to be a curve at almost right angles, about an eighth of an inch from the apex. The palatal canal was cleansed out and a probe passed into the antrum. I decided to amputate the palatal root. Should the disto-buccal root give trouble later on, I would open up the alveolar process and trim off the end of that root. With the use of adrenalin and a five per cent. solution of cocaine I separated the palatal root from the body of the tooth. This was a difficult operation. The root was fused as much as an eighth of an inch from the bifurcation. The pain was quite severe after the root had been detached, so I decided to allow the root to remain until the next day. The patient was discouraged on his return, and

demanding the extraction of the tooth. It was impossible to persuade him to allow me to complete the operation. The tooth was extracted. The disto-buccal root was just as I had diagnosed it. About an eighth of an inch from the apex the root described almost a right angle. I treated the case for a week and discharged it.

An interesting case of caries of the superior maxillary bone, of eighteen years' standing, came under my care about six months ago, which I will mention here, as it touches slightly on the subject of the evening. The caries extended from almost the median line to just beyond the second bicuspid. The probe almost reached the palatal root of the first molar. The filling had been lost in this molar, and it contained a putrescent pulp. I opened the root-canals and found the palatal root had an enlarged apical foramen and perforated the floor of the antrum. I advised the extraction of this tooth, fearing the carious bone would cause some unlooked-for results.

I have never attempted to treat an infected antrum by amputating the palatal root and using the opening for the introduction of a canula for drainage. The process being soft and cellular, the probabilities are the pus infiltrated through to such an extent that the removal of the suspected bone would leave the tooth with very little, if any, support.

Occasionally the root of a second bicuspid perforates the wall of the antrum. When putrefaction of the pulp takes place an abscess draining into the antrum is liable to result. In the endeavor to save the tooth I have seen the antrum treated through the tooth. These cases are rarely successful. For a time—weeks, months, or several years—the suppuration will stop, then suddenly and unexpectedly the old symptoms return, and when they do they are more difficult to treat, having becoming chronic.

In 1897 I operated on a case of caries of the right palate bones. The diagnostic signs and symptoms were identical with those which would indicate purulent secretion in the antrum. A youth, seventeen years of age, complained of pain in the region of the superior right maxillary bone, infra-orbital neuralgia, and a sense of fulness over the entire region. The teeth appeared to be in good condition. The first molar had a large cement filling. This was removed and a putrescent pulp found. After cleansing out the root-canals I found the two buccal roots normal, but the flexible probe passed through the apex of the palatal root and met with no obstruction for

over an inch. My diagnosis was an abscess draining in the antrum. This root diverged abnormally from the buccal ones. For this reason, before giving my diagnosis to the patient, I again passed the probe through the apex and worked it in until I expected to touch the opposite wall of the antrum. Much to my surprise, the patient exclaimed, "Doctor, the instrument is in my nose." I next examined the roof of the mouth. There was no indication of any trouble here, with the exception of a very small white spot, smaller than the head of a pin, on the right side, between the median line and first molar. It appeared so insignificant I paid no attention to it. At this time I was passing a blunt probe over the roof of the mouth to locate any tenderness, which would help me from a diagnostic point of view. I pressed upon this white spot gently and the probe slipped through into the nose. The palatal root did not perforate the floor of the antrum but pointed towards the nasal cavity. I treated and filled the root-canals and crown. The following day I removed quite a quantity of the palatal and alveolar processes. This was done by making a deep incision from the median line opposite the second bicuspid to the second molar, and another incision from the median line to the cuspid, making a flap, which was dissected down, exposing the carious bone. This was all curetted out, leaving an opening about the size of a nickel between the nose and mouth. The flap was replaced, and, as it seemed to adapt itself so readily, no mechanical means were taken to retain it in position. The granulation filled in rapidly, with the exception of one point, which was kept open intentionally for drainage and syringing the floor of the nose. In three weeks the entire surface was healed, and in six months new bone filled up the space formerly occupied by the carious bone.

I should like to say a few words about hydrogen dioxide. It never should be used unless there is a large opening to allow it to escape easily. I have no doubt but what considerable damage is done by syringing the dioxide through the apex of a root into tissue, either bone or soft, for exploratory purposes, without having sufficient drainage. A good example of the folly of using it to asepticize the alveolus of a superior central incisor occurred to me in my first month of practice. The apex was large enough to allow the passage of a very fine broach. I used a small syringe to insert into the root-canal, and when the dioxide passed through the apex into the alveolar process the pain was excruciating and the lip began to

swell. In less than five minutes the swelling was as large as a good-sized apple.

Fortunately Dr. James E. Garretson was in the next room, and I sent for him. The swelling was still growing larger, until it became half as large as her head. He immediately advised me to open up through the process and drain the parts, which I did. It stopped the pain, but the tumefaction did not disappear for nearly two weeks. Dr. Garretson could assign no cause why the dioxide should cause such an emphysema. It was an inoffensive-looking incisor. I have never used it in a root-canal since, unless there existed another means of drainage. Since then I have heard of many similar cases from other dentists, but no such extensive emphysema.

Just see what a complicated condition would have resulted had that been one of those palatal roots we are discussing, instead of an incisor. Some of the gas eliminated by the action of the hydrogen dioxide on organic matter would have passed into the antrum, possibly carrying some deleterious particles of matter along with it, causing an abscess; surely so if it were one of those anomalous conditions of the antrum, such as the obliteration of the opening into the middle meatus of the nose, caused by hypertrophy of the bones. So I repeat again, one should be very cautious about syringing dioxide in an antrum through a root-canal unless there is a source of drainage elsewhere.

CASE OF ARSENICAL NECROSIS.

BY JAMES EDWARD POWER, D.M.D., PROVIDENCE, R. I.¹

I REPORT one of the many cases which have come under my observation during the past few years at the hospitals at which I am connected, wherein it is reasonable to suppose that had the practitioners who were first called to see this, and similar cases, conformed to the laws of the proverb, "Success seeks to crown him

¹ Assistant Dental Surgeon to Rhode Island and St. Joseph's Hospitals, Providence, R. I.

who is firm in his conviction, but invites reason to opinions he holds or expresses, and who realizes that the field of knowledge is far greater than his own personal store," much suffering would have been obviated.

This applies to every man, and especially to men who are engaged in professional work, because no man, no matter how proficient, can possess a monopoly on all the important branches, whether it be diagnosis or treatment.

With all due respect to the practitioner who first treated this case, is it unreasonable to feel that this poor man had been done an injustice, knowing the destruction this disease will cause in twenty-four or forty-eight hours, and considering that it was allowed to progress for thirty-five days without operation, and nothing to check its progress but applications of hot flaxseed poultices and salt-bags?

I obtained the following history from the patient:

Mr. H., aged thirty-six years; born in New York; occupation, dresser tender. Previous to the time of his illness he was always healthy and robust; mouth never gave him any trouble, as all teeth were present except two molars on each side of the inferior maxilla.

On the evening of May 8, 1902, patient, on returning home after the day's work, complained of feeling sick,—headache and nausea. His condition remained about the same until Sunday, May 11, 1902, when he noticed a dull pain in the region of the symphysis and extending all along the body of the bone. He thought it was neuralgia, but the pain developed so during the day that he resorted to one grain of morphine that night to relieve the pain, which by this time was almost unbearable, and caused him to lie awake all night.

During the following night he took five quarter-grain tablets, but pain continued, and he was very delirious during this and the following night.

On May 14, 1902, a physician was called, who found the patient's temperature 105° F. He diagnosed the trouble neuralgia, and advised application of hot salt- and water-bags to the chin. This treatment was continued for eight days, during which time the skin covering the chin was destroyed by the heat, the inflammation on the inside of his mouth was increased, and the physician incised the gum freely, not getting any or much pus. The patient seemed to

get temporary relief while the heat was applied to his face, but on removal of same, pain was much worse than before.

May 15, the physician changed his diagnosis and said it was an ulcerated tooth, and extracted inferior central incisor tooth.

May 16, extracted lateral incisor tooth.

May 20, he advised mouth-wash, and on May 22 patient requested physician to discontinue his calls, as he seemed to be no better than he was on May 14.

On May 23 he visited an emergency hospital. Temperature, 102.7° F. The attending physician said he did not know what was the trouble, but advised application of hot flaxseed poultice. After five days, abscess appeared and was lanced. Patient continued to syringe the mouth until about the first week in June, when he was referred to a dentist for advice. The dentist refused to extract the tooth, as he said there was no cavity.

About a week later, he visited another dentist, who extracted this tooth, and three days later extracted three more.

The patient visited the Emergency Hospital until June 11, 1902. On this day he was told to visit St. Joseph's Hospital for advice by the attending physician.

On June 12 he was among the patients at my clinic at St. Joseph's Hospital, and examination presented a well-developed case of necrosis. Inside, the mouth was highly inflamed, and on the chin in the region of the symphysis was a very tender spot, which gave the patient a great amount of pain on being touched very lightly with the finger. His condition was poor, he having lost twenty-two pounds since May 14. I advised immediate operation, and on Saturday morning, June 14, I proceeded to operate under ether, first extracting the remaining teeth,—two bicuspid on the right side and one bicuspid on the left, leaving the two last molars present.

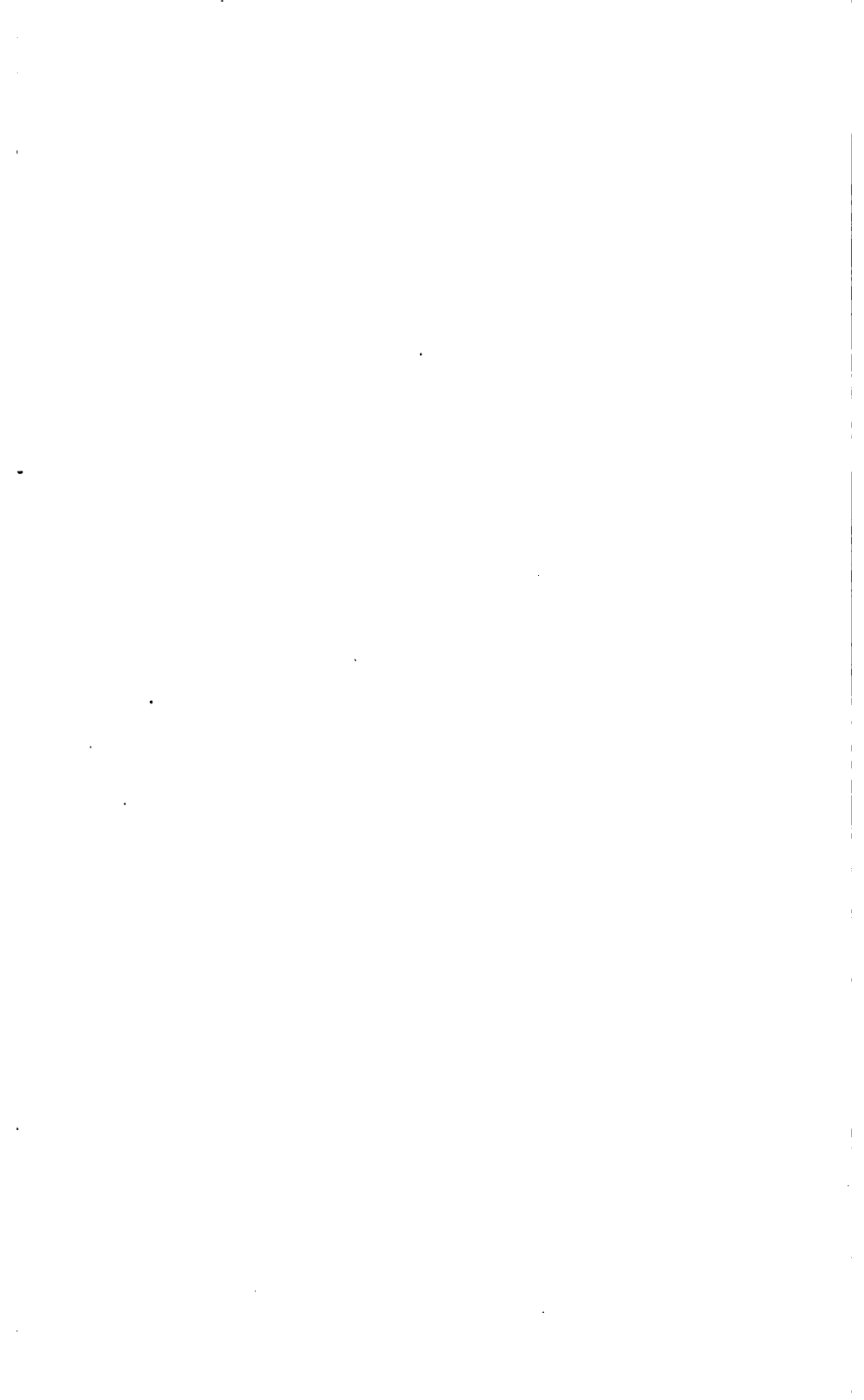
Although the area that seemed to be affected was confined to the body of the bone previously occupied by the six anterior teeth, I made an incision along the body of the bone (inside) from one wisdom-tooth to the other, and by the use of spoon-shaped curettes scraped all dead bone away. I then cut all sharp or jagged edges away with bone-cutters. I prescribed mouth-wash, and did not see patient again until half-past ten in the evening; found him quite comfortable. Temperature normal the following day. I visited him every day until July 20, when I discharged him, cured.



This model was taken shortly after operation, and carved to show area of bone which was affected. Crosses (x) show places where taken with probe, from the superior to the inferior surface, and measurement was one inch deep.



This model shows mouth as it is to-day.



An interesting and peculiar thing connected with this case was that although the tissue posterior to the bicuspid teeth seemed normal, the bone was affected very extensively.

A good rule to use in operating on necrotic bone is one I learned during my second year at college, and which I think may be applied to all cases where a cure is desired by operation,—namely, scrape until you are sure you have scraped enough, and then scrape some more.

When I first saw the patient I was somewhat baffled as to the cause and the special kind of necrosis with which he was afflicted. On answering my questions, he said he had never visited a dentist, had received no recent injury to the part, had never held matches in his mouth, and had never had syphilis. Family history good; no tuberculosis; had his chest examined for same, and the interne who made the examination found his lungs in excellent condition. This information removed from the list of probable causes necrosis from broken bone, necrosis from arsenic used by dentists, syphilitic necrosis, phosphorus necrosis, and tubercular necrosis.

Finally, I asked him what he used to cleanse his teeth, thinking that he may have become infected from the use of cheap dentifrices sold by “fakirs,” which, when applied, “change black teeth to white instantaneously,” but he replied that he never used anything to clean his teeth except pieces of yarn. He used this about every day to remove particles of food which became lodged between the teeth. Closer investigation showed that he used yarn of all shades, especially green and red. I then concluded that he had become infected from the arsenic used in dyeing the yarn, and requested him to bring some of the yarn to me. I examined same and found that it did contain arsenic, thus removing all doubt as to the kind of necrosis with which my patient was affected.

The patient is now entirely cured, and is wearing a plate to restore contour of face and to give him the advantage of artificial teeth also.

A NOTE ON THE APPOINTMENT OF DENTAL SURGEONS TO GENERAL HOSPITALS.¹BY E. LLOYD-WILLIAMS, M.R.C.S., L.R.C.P., L.D.S.²

I AM asked by my American brethren to write a short note on the appointment of dental surgeons to general hospitals, more especially as we, on this side of the water, have had some considerable experience of such appointments.

For the sake of brevity it may suffice to consider two points,—the desirability of having a dentist on the surgical staff of a hospital, and his utility if appointed.

(a) Is it advisable to have a dental department of any sort at a general hospital?

Over here we say, Yes! And the fact that every hospital of any note in Great Britain has its dental surgeon goes for something. The intellect is indeed shallow that cannot glean stray wisps of wisdom from history and tradition. The experience of the world is not altogether foolish nor valueless. If the largest city in the world—with the largest hospital system—has persisted for some years in appointing dentists to its hospitals, it may be conceded *a priori* that there must be some possible benefit derived. From a purely selfish professional point of view we are, of course, glad that dentistry should be acknowledged in this way. Our profession is so young that we are apt to forget the modesty which ought to grace youth. To be taken by the hand by our elder sisters, *Medicine* and *Surgery*, and introduced to the circle of healing art is at once a pleasure and an augury of future usefulness. In America oral surgery in its entirety is often in the hands of the dentist, and on this point much might be said for and against; here, the general surgeons are very jealous of any encroachment on their domain, and the matters referred to the dentist by his colleagues are purely dental, with a slight overlapping of such cases as antral abscess, dental cysts, or fractures of the jaws. It is only fair to state, however, that the dentist's advice and assistance are often sought in numerous operations about the mouth, where his special

¹ Read before The New York Institute of Stomatology, May 6, 1902.

² Dental Surgeon to the Dental Hospital, London.

dental knowledge is likely to be of value. From this we may gather that the staff of a hospital considers that it derives assistance from a dental colleague. The question as to the benefit to the public is pertinent to our second inquiry:

(b) Is the dentist of real use? Undoubtedly to his colleagues and in special cases; but, generally speaking, does the suffering *clientele* of the hospital benefit?

Let us inquire as to the duties which it is possible for him to perform. First of all, he can advise; and good advice may mean much to a sufferer. Secondly, he can give the more immediate relief of extraction. Some pious dentists hold up their hands in horror at the very mention of the word! What is the poor woman, who has left six children at home in the charge of a neighbor, to do with a raging attack of pain from an abscessed molar? "Pay several visits to a dental hospital and try and have the tooth saved," say some of the smug exponents of a pseudo-conservative turn of mind. In hundreds of instances the very poor *cannot* leave their work for prolonged treatment. It is very sad; but we cannot revolutionize the social conditions of the poor in dental matters all at once, and it still remains a fact that in very many cases the only possible relief of dental suffering lies in cold steel. Very often the patient is anxious and willing to have treatment; and here the difficulty arises that one man cannot possibly devote sufficient time in order to cope with a large number of cases. At some of our larger hospitals it is possible to find dressers from the medical students who are anxious to carry out treatment of an elementary nature, and many dressings, temporary fillings, etc., are done. This, however, is the exception; and it stands to reason that a man, single-handed, can do but little conservative work. But what he can do is this, and here, in my opinion, lies one of the principal benefits of the appointment: he can advise treatment, explain its nature and importance, and influence the patient to apply at a special dental hospital, where every facility is at his service. This is largely done in London hospitals, and the real benefit is perhaps larger than might at first sight appear. For these reasons, hurriedly expressed, I advocate strongly the appointment of dental surgeons to general hospitals; the result is not perfect, but it does some amount of good. I once heard the question propounded, "Is marriage a failure?" with the reply, "Yes; but it's the best we've got!"

THE HOSPITAL'S NEED OF A DENTAL STAFF.¹

BY DR. A. J. FLANAGAN, SPRINGFIELD, MASS.

MR. PRESIDENT, MEMBERS, AND FRIENDS OF THE NEW YORK INSTITUTE OF STOMATOLOGY,—About two years ago the essayist was a guest of your society, and presented a paper calling attention to the lack of charitable work by the profession as a whole, and incidentally mentioned that our hospitals throughout the world needed our services also. The editor of the INTERNATIONAL DENTAL JOURNAL, some time after this, had an editorial entitled, "Is Dentistry a Charitable Profession?" You will find the essay mentioned and the discussion which followed it in the April, 1900, issue, and the editorial in the May, 1900, issue. The editorial was a very able one of nearly five pages, and, to sum up the whole matter at issue, maintained that it was impossible for dentistry to be a charitable profession along the lines recorded in my paper. The last thought in that editorial I will quote: "While the writer is in full sympathy with the general trend of thought in that discussion, it does seem that with our charitable views we should combine the practical possibilities, and these would appear to be confined to the colleges that are alone capable of bringing together the needy, willing to suffer, and the undergraduate willing and eager to work." Not long since the Valley District Dental Society had a banquet, and in the after-dinner talk the old question of dental charity was brought forth by the writer, as apropos to the remarks of one of our esteemed dental editors, who was one of the guests of the evening. The editor answered my remarks in no uncertain manner that evening. You will find much that he said embodied in an editorial in this month's *Items of Interest*. The editorial is entitled, "Dental Fees. Dental Dignity. Dental Charity." There is but one thought of that editorial I will quote: "It is a fact that dentists do less charity work than they should. There are individual exceptions, of course, but aimed at the entire profession the accusation is true." My thanks are due him for his plain, unvarnished statements; however, my sympathy may be extended later, for he may be put "to battle royal" in defence of his honesty and courage in this matter.

¹ Read before The New York Institute of Stomatology, May 6, 1902.

As a continuation of the paper of January, 1900, we will take up some of the needs the hospitals have for the dentist. It was my intention to present a rather elaborate paper for this evening, illustrated by drawings and models. I found, however, that it would be impossible to do justice to what had been planned without three hours of your valuable time. This would have prevented the reading of Dr. Williams's paper and the discussion following, for it has always seemed to me that this society should be complimented on one thing above all others,—the able and thorough analysis which you seem to give all papers. The discussion following a paper is frequently productive of greater good than the paper itself. If the future warrants a continuation of my thoughts, embodied in practical models and drawings, you will find me at your service.

The word hospital can be traced back to the Latin word *hospitalis*, and in the early Latin meant a receiving of strangers or guests in need, without reward or recompense. The present would mean that it is a building in which the sick, injured, or infirm are relieved and treated, either at their own expense or more often by charity in whole or in part. A logical reasoning would deduce the thought that a hospital was not a place for a person at ease; it would be the place for a person suffering with what good Dr. Garretson so well described as a *dis*. If one has not ease, it necessarily follows he must have the opposite,—that is, disease. Therefore, in the broadest and truest sense hospitals should be established for the amelioration or cure of beings suffering with disease. This evening's paper deals with the hospital and its work, from this point of reasoning.

Some one has said that "charity is that priceless gem, affixed by God in the human soul, to measure man's allegiance to the highest and holiest laws of heaven." It is that which brings the entire world to that common centre, relationship. Now, charity, to be effective on the broadest and highest lines, needs organization and system of recognized worth. No one institution has a greater need of these requirements than our present home of benevolence, housed under the roof of a hospital. Time was when our hospitals had a decided limited field of usefulness, but if I may be allowed to prophesy for their future, the claim will be made that all specialties of the healing art will not only have to be recognized there, but will have to be part of their working force. The evolution of the world in thought,

science, and art has brought forth the specialist; the past has been a field for the man able to do many things "fairly well;" the future is to produce the man able "to do something" better than others. Might we not claim that the past has been the "constructive," and the future will be the "perfective" age. Admitting then the future as the "perfective" age, we will surely see all specialties of the healing art members of the hospital staffs. If dentistry is a specialty of the healing art, the future will have us enrolled there for service, on a broad humanitarian plane. Then, what of the dental staff's field of usefulness?

The general surgeon finds that fractures of the lower jaw are the most troublesome to treat, as he is not able to apply splints in the ordinary manner, owing to numerous muscles displacing the fragments. The many muscles controlling the jaw, tongue, larynx, and neck play small part in this displacement. If the fracture be at the median line, there will be little or no displacement, as the muscles of one side have no advantage over those of the other. The muscles most active are the masseter, internal pterygoid, mylohyoid, geniohyoid, and geniohypoglossus. A decided movement of the head, either rotary or otherwise, will have a tendency to displace the fragments, and the simple acts of deglutition and speaking will frequently do the same. In the act of swallowing the larynx is elevated by the contraction of the hyoid muscles, which are attached to the tongue and the styloid process of the lower jaw. Before the contraction can take place the lower jaw must be fixed to the upper by the muscles which fix the mouth, when the act may be accomplished. Time forbids going further into the action of the muscles in the various forms of fracture. Necessarily, the inferior—from its exposed position, shape, and office—is more exposed to fracture than the superior maxillary bone. You will generally find the location of a fracture depends to a great extent on the direction of the force causing the same and the position of the teeth remaining in the jaw. Fracture of the ramus is rare. Fractured necks of the condyle are rather frequent, and, as a rule, serious, for you may have brain complications. Fractures of the alveoli are common. Fractures may be simple, compound, or comminuted. It is rarely that we have the nerves and vessels involved from fracture. The average case in the past has frequently been treated by the use of a four-tailed bandage, or by wiring the parts together. The teeth were not considered as essential to either health, comfort, or good looks.

The imperfect contour of the face was of small importance. If the parts had union it was of little consequence whether the articulation was good, bad, or indifferent. The question of comfort was never considered. After some years experience in the treatment of such cases, I am firmly convinced that the case is indeed rare which cannot be best served by the employment of the services of an intelligent practitioner of dentistry. The making of correct splints, from correct models, is the only legitimate method to pursue in the vast majority of cases. It is not the province of this paper to describe the manner of making the various splints required; indeed, only fundamentals could be given, for every case has a different application of the fundamentals.

There are many hospitals which desire and employ the services of the dentist in fracture cases, the filling, cleaning, and the extraction of teeth, but when a hint is made of further use, the question, to say the least, is debatable in certain quarters. My paper of January, 1900, called attention to the needs of ordinary dental service in hospitals and institutions of varied nature, and this evening I propose to pass over the line which is not debatable into that which may be.

The medical journals of the last few years have had many articles on the treatment of cleft palate by surgical operations. There seems to be a revival of this sort of surgery. History has proved in the past that many cases of recorded success—at the time of operation—have not been so in later years. In the vast majority of hospital cases the use of an obturator is not considered. Here lies a field of usefulness second to none. To my mind there should be a thorough understanding of each case, from the stand-point of both the operative surgeon and what might be well termed the appliance surgeon. In these newer methods of surgical operation, is history to repeat itself?

Dentistry has several *dernier ressort* causes for so-called "known and obscure" dental troubles. I will mention but two,—“ulceration” and “you have caught cold.” Medicine has our congratulations with several, and of which we need mention but two,—“dyspepsia” and “neuralgia.” No patient in relating his troubles stands “the ghost of a show” in the argument when these pseudo troubles are hurled at him. It would be safe to say that at least seventy per cent. of so-called “facial neuralgia” has a dental origin. Patients are prone to seek the advice of medical practitioners for

these ailments, and in the vast majority of cases no examination is made, and a drug of some kind is prescribed as the only remedy. The average treatment of dyspepsia is equally as bad. No calling can be considered either scientific or ethical which continues to treat symptoms when causes can be found. Is it not honest to say that many cases of dyspepsia have a dental origin? The treatment of symptoms rather than causes has been the means of sending many a poor human being through after-life a drug degenerate.

Institutions caring for the sick have many forms of disease located in the hard and soft tissues of the mouth and adjacent parts. Of these we may well mention diseases of the mucous membrane, dental pulp, and pericementum. There are many varieties and causes, and here the educated and advanced dentist can be consulted with practical results.

The microscopical examination of blood and urine is playing an important rôle to-day in detecting the causes of many disorders. I wish to prophesy that the microscopical examination of saliva is going to play an equally important part. The work of Drs. Michaels, of Paris, and Kirk, of Philadelphia, along these lines is sure to be productive of good results. On Friday last I spent a most enjoyable and profitable hour at the University of Pennsylvania viewing some results of saliva study brought forth by Professor Kirk. If the saliva is to be the means of helping general pathology and therapeutics, who is better able for its study and experimentation than the advanced dentist?

Harvard Dental College for some years has paid special attention to the mechanical treatment of fractured jaws and cleft palates under the very able teaching of Dr. P. W. Moriarty. No student of his ever left the college without being thoroughly drilled in the fundamentals of treatment for such cases, and I know of no one man who is deserving of greater recognition in his specialty. If you are interested in fractured jaws and cleft palates I would suggest your obtaining his writings on the subjects. Individually, I owe to Dr. Moriarty a great debt in first interesting me along the lines of hospital interest and work.

A training of the mind is said to be the meaning of education. A training of the mind in the best sense produces him who observes, compares, reflects, and records. At no time in the history of dental science has there been a greater need of the trained mind. We have floating in hazy atmosphere the outlines of many scientific problems,

and we need but the master mind to grasp forth and convert them into living actual truths. What is accepted to-day as the truth in knowledge and practice may not be so to-morrow, and after all, was not this the wisdom of the Infinite in very completeness. If to-day sees the completeness of knowledge and environment, who wishes to hail the to-morrow.

Reviews of Dental Literature.

ALUMINUM FOR DENTAL PLATES.—Ash & Sons' Quarterly Circular for June, 1902, contains a paper by A. Sandvig, of Lillehammer, Norway, on "Aluminum in Dental Practice." The author has for some years experimented with this metal for dental plates, and has devised a method of swaging aluminum upon Spence metal dies, using moulding-sand as a counter-die. He was led to abandon the usual zinc die and lead counter-die from observing that when the aluminum became contaminated with either metal, although the amount was so small as to escape observation, the plate was quickly destroyed by corrosion when placed in the mouth. Unless great care was used to keep the plate enveloped in tissue-paper during the swaging, and to carefully polish it before annealing, minute particles of zinc or lead adhered and united with the aluminum during annealing; these contaminated spots in a few months developed into holes. He has devised a swaging apparatus whereby the moulding-sand, confined within a cylinder, is forced down upon the aluminum plate in position on the Spence metal die by screw pressure. He states that the moulding-sand thus used becomes as effective a counter-die as is lead, and all risk of metallic contamination is avoided. He lays stress upon thoroughly swaging the aluminum so as to develop hardness, and states that, thoroughly hardened by swaging, the metal becomes elastic, hard, and eight times as strong. To this end he anneals as little as possible; if the metal is pure, not at all after beginning to form the plate. To strengthen the plate, he doubles it over the ridge by making a strip of metal conform to this part, perforating it, and with aluminum rivets riveting it in position with a strip of black rubber between it and the plate. He secures the teeth to the plate with

vulcanite. He enjoins care to avoid the aluminum coming into contact with any other metal in the mouth except pure gold or platinum; these are harmless; any other metal excites a destructive galvanic corrosion.

W. H. T.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the office of Dr. G. S. Allan, No. 51 West Thirty-seventh Street, New York, on Tuesday evening, May 6, 1902, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the previous meeting were read and approved.

The President.—The following report has been received from the committee appointed to prepare a memorial to be entered on the minutes regarding the death of our first president, Dr. Benjamin Lord.

“The New York Institute of Stomatology, having heard with deep regret of the death of our honored friend and first president, Dr. Benjamin Lord, desires to express in this formal way our sense of loss and bereavement.

“Dr. Lord, by his earnest and painstaking devotion to the pursuit of the ideal of excellence, had won the respect and esteem of all who knew him.

“He was one of the organizers of this Institute, and its earnest friend to the last. The raising of a fund for scientific investigation in our branch of the healing art, which fund has been placed in the hands of the Board of Directors of the Institute, to be used at their discretion, was mainly due to his efforts.

“His more personal qualities, his firmness of opinion, his loyalty to the truth as he perceived it, his frank outspokenness, no less than his kindly feeling, have endeared him to his friends and made him a force in their counsels.

“Our profession has been honored by so sound and true a life, the key-note of which has been the faithful doing of daily duty, and we are all the poorer by the loss of such a friend, who, having ‘been

faithful in a few things,' has heard the 'well done' of the Master and has entered into the joy of the Lord."

A paper written by Dr. E. Lloyd-Williams, of London, was read by Dr. Kimball.

(For Dr. Lloyd-Williams's paper, see page 794.)

The secretary read a letter from Dr. Barnes, of Cleveland, Ohio, expressing his interest in the subject of the evening, and the belief that dentists would prove of great value on hospital staffs.

The President.—I have now the pleasure of introducing our fellow-member, Dr. Flanagan, of Springfield, Mass., who will read a paper entitled "The Hospital's Need of a Dental Staff."

(For Dr. Flanagan's paper, see page 796.)

DISCUSSION.

Dr. R. C. Newton.—Mr. President and gentlemen, if I should say that I feel greatly honored at the invitation to be present and take part in the discussion here to-night, my words would but feebly express my feelings. I am much pleased to be here and much pleased to have an opportunity to help in any way that I can a movement in which for some years I have taken an especial interest.

I agree fully with the contention of Dr. Flanagan's paper that hospital work would be better and more complete if dental surgeons were represented on all hospital boards. There is no question that such a state of affairs would benefit the patients in the hospitals. To my mind it is equally clear that it would benefit the medical men connected with the hospitals, both the internes and the externes; and lastly, it could not fail to benefit the dentists themselves. On the latter aspect of the question, at the risk of seeming to be personal, I will make, if you will permit me, a few observations. Perhaps I cannot do better in stating my position than to quote from an address delivered before the Section on Oral and Dental Surgery of the American Medical Association in 1895, by Dr. Latham, of Chicago. The doctor says, "Every member of the dental profession can recall the days of his service in the operating-room, and remember his difficulty in procuring help from the professor or his assistants. For, as a rule, the corps of instructors in our colleges, medical and dental, is much too small." I might say, in passing, that when I was a medical student these strictures would hold true against the medical school where I studied my profession. It was an unendowed, inadequately manned, and

poorly managed institution, housed in a dingy, ill-ventilated, and cramped building, where a proper oversight of the students was not exercised, and where the personal help and guidance which every student needs had to be obtained from private quiz-masters. Such was the best medical school in the city of New York twenty-five years ago; and now see what it has become, as the Medical Department of Columbia University. The great and crying need for better quarters, more teachers, better laboratory facilities, has been heard, and you all know the present fine equipment not only of that medical school, but of all the principal medical schools in this city and elsewhere. I mention these facts to encourage you. Your dental schools must be improved and enlarged. They must be endowed and be called part of the great universities. If you say that this will be impossible, I point you to what has been done for the medical schools. It is not impossible. It is not only possible, but, for one, I fully believe that it will come. However, I anticipate. I will, with your kind permission, return to our author's address, which continues:

"The larger the clinics, the more benefit we may derive from them. The larger the corps of capable demonstrators, the more practical and successful professional men and women we become. It seems a curious fact that works on dental surgery are so imperfect and rambling on the subject of diagnosis."

Why are dentists, as a class, not better diagnosticians? Dr. Latham gives five reasons as follows:

"(1) The hurry to obtain a diploma.

"(2) The study of only just what seems absolutely necessary in the practice of dentistry, and a corresponding inability to apply general principles.

"(3) The fear of encroaching on general medicine.

"(4) Insufficient preliminary education.

"(5) Lack of a thorough knowledge of the normal conditions and a habit of relying too much upon one mode of treatment.

"A student may be well versed in the sciences of his profession, and yet unable to diagnose the simplest case of disease presented in actual practice."

Admitting that the above remarks are true, it seems doubtful whether the average dentist will be satisfied to continue in this inferior position. Will he not rather take every means at his command to improve the morale and the equipment of his profession,

until no one shall say that intellectually or socially he stands below the average practitioner of medicine? If, as I said above, dentists shall be appointed on the staffs of general hospitals, numerous advantages would follow.

The first, and perhaps the most important, influence would be upon the internes. I have long believed that my profession is somewhat lax in studying sufficiently and giving due consideration to the condition of the teeth of their patients. Our text-books have little to say upon this important subject. Too much is left to the discretion of young practitioners, and, as we have often observed, the condition of the teeth may be overlooked or ignored. All well-equipped medical men will admit, if they are asked, that unless the denture be good and the patient takes the time and trouble to masticate his food properly, dyspepsia, constipation, neurasthenia, with all their never-ending train of symptoms, leading in many cases to complete destruction of the physical and mental health, will surely follow.

On all of our book-shelves are heavy volumes on diet; we spend much time in determining the relative amounts of proteids, hydrocarbons, and carbohydrates which the ideal dietary calls for; but there is very little time or trouble spent in instructing people how to eat and how to care for their teeth. The value of teeth as such is not sufficiently impressed upon the minds of the common people. Very fortunately fashion leads many, especially women, to be exceedingly careful of their teeth and to spare no pains or expense in their preservation. However, the younger doctors themselves seem to me to be far too careless not only about their own teeth, but in instructing their patients to care for theirs. In administering some of the almost interminable list of remedies for dyspepsia, how often do we think to carefully explore the patient's mouth and ascertain whether he has the facilities for properly masticating his food and mixing it with saliva before it goes into the stomach at all? I have seen eminent medical men bolt their food practically unchewed, so that it enters the stomach in an unfit condition and can never be properly digested and assimilated. If these men have ever had the necessity of eating properly impressed upon them, they have got far away from their teaching.

I believe, for this reason alone, it would be very desirable if young medical men and young dentists mingled together during their student days, that the value of the teeth and how to preserve

them might be impressed upon the physician more strongly than it seems to be at present.

As to the benefits which would accrue to the patients in hospitals if there were some dentists around to take care of their teeth, I need not take up your time by arguing the question; we all agree that the benefit to the patients would be incalculable. Therefore let us turn our attention for a few moments to some of the advantages which young surgeons might reap from a hospital course. I have already touched upon some of the present disadvantages under which dental education suffers. Like all specialists, the field of dental work being somewhat limited, dentists tend to grow narrow and one sided, to think only of the teeth of their patients, to forget that there are other organs in the body and that a comprehensive view of medicine and hygiene must include a wise care of them all.

There seem to be some superstitions surrounding dental practice, just as there are ordinary every-day medicine. Perhaps you will forgive me if I mention a little incident which came to my knowledge a day or two ago. A young physician was sent for to lance the teeth of a squalling infant. He read the mother a lecture on interfering with the ways of Divine Providence, informing her that God never meant teeth to be lanced, and then directed her to rub the teeth through with her thimble. The incongruity of his utterances never seemed to strike him. But one would think that in our day an aseptic, well-sharpened lance would be preferred to a rough, dirty thimble. However, this young gentleman had not enjoyed a liberal preliminary education. From lack of the mental balance and acumen which comes from study and experience, the absurdity of his advice did not appear to him; and so with many a doctor who lets prejudice or pique take the place of reason and judgment. This very matter of lancing gums in teething infants meets frequently with this objection from doctors, that if the cut heals over it will be harder for the tooth to come through, because scar tissue is more resistant than normal tissue. This reason is at variance with the facts, which are just the reverse, as a moment's reflection will show any one who is at all familiar with pathology. Whatever view a practitioner may take of the procedure, the objection commonly alleged against it is not well founded, and shows the unthinking way in which many physicians decide medical questions.

In the same way dentists seem to cherish some ancient supersti-

tions. I will mention two or three of those that I have most commonly met with.

Dentists not seldom decline to draw teeth in the height of a toothache from greatly swollen gums, giving the patient to understand that it will be dangerous or impracticable to do so, thus adding, providing of course that the tooth must be sacrificed eventually, several hours' or days' pain and discomfort needlessly to the patient's suffering. Again, certain dentists decline to fill or clean the teeth of pregnant women, thinking that this will bring on a miscarriage. While it is perfectly conceivable that dental work might bring on a miscarriage, I believe that it has very rarely, indeed, done so, and in the vast majority of cases it is far better to preserve the teeth of a pregnant woman by doing the necessary work to them than to allow the caries to go on until after the confinement is over, and so not only subject the woman to the risk of losing the teeth altogether, but also adding to the gastronomic discomfort and indigestion from which a pregnant woman generally suffers by leaving decayed and probably painful teeth in her mouth. My experience leads me to assert that the shock of conception and the early changes in the economy following it are especially marked in their destructive influence upon the teeth. In other words, shortly after a woman discovers that she is pregnant she begins to complain of her teeth, new cavities form and old ones enlarge, so that the fillings not infrequently drop out. The old dictum that odontalgia is a sign of pregnancy is too generally accepted to be without foundation. Now, to decline to interfere with this destructive process for several months is, in my opinion, poor surgery and worse dentistry.

Again, the present day may be said to be the era of dieting. The medical profession is forbidding this and avoiding that, until it seems difficult to find any form of alimentation that is at once nourishing and innocuous; and now come the dentists and forbid this and that article of diet, especially at present, I believe, grapefruit, as its acid properties are asserted to be destructive to the teeth. And inasmuch as uric acid in the body is alleged to be one of the causes, if not the principal cause, of Rigg's disease, of recession of the gums, etc., and under the assumption that vegetable acids are formed into, or augment the formation of, uric acid, they must be forbidden; because they may cause rheumatism and subsequently gingivitis, pyorrhœa, alveolaris, etc. This I esteem

"bad medicine" and unwonted interference with the natural and proper craving of all human beings, and especially the young female, for acids. If bad effects can be shown to follow the use of acids in any particular case (and there are people whose systems will not tolerate acids), let them be forbidden for that case. But to forbid all people to eat grape-fruit because its acid may have injured the teeth of a few, is in my opinion unwarranted.

The question of diet is an exceedingly complicated one. The best men in medicine are by no means agreed upon the rules which should govern it, nor upon the ideal dietary. What is sought to be accomplished by withholding ailments of one class may be gained at a great injury to the economy generally, and for this reason a too rigid diet is often quite hurtful, and may do more harm than good. Therefore the dentist must be careful and conservative in undertaking to enforce rules about which experts are still in doubt. These are only a few of the questions, Mr. President and gentlemen, which must come before the conscientious dentist, and which are still puzzling his medical brother. They call for the highest medical education, as well as a great deal of experience and sound judgment. The dental practitioner must himself be able to judge of the merits of each case as it comes before him, and must not be too much influenced by the *ipse dixit* of any teacher, no matter how eminent.

Lastly, if I have not already taken up too much of your valuable time, there is another view of this question which you cannot neglect. I refer to its charitable aspect. Unless dentists are ready and willing to give a certain portion of their time and skill to the poor, dentistry can scarcely be esteemed a part of the liberal profession of medicine. It is the liberality of physicians, the willingness to give up their best skill and thought without any immediate and tangible reward, that has made our profession the most honored and beloved of the learned professions. It is this that gives us an almost unbounded influence. The rich will endow hospitals freely so long as there is need for them; so they would endow dental hospitals and clinics just as soon as there shall be found enough dentists willing to give the time and skill necessary to care for the teeth of the poor. No man can live rightly in our day without trying to help his brother. No man can himself become a broad-minded, philanthropic man, who, seeing his brother have need, will not give him what he alone can give.

Mr. Morgan or Mr. Carnegie may endow many hospitals, but

I doubt whether they can fill teeth properly. It is up to you to supply one of the greatest needs of our modern civilization in caring for the poor man's teeth.

It is no flight of the imagination, but a truth to which I believe every man in this room will assent, that bad teeth (and my experience leads me to say that practically all the very poor have bad teeth), lead directly to intemperance in drink. Improperly masticated food produces chronic dyspepsia, which produces pain, uneasiness, and flatulence in the stomach and bowels, hence the craving for the alleviating effect of alcohol, for the comfort and warmth which follows its ingestion; hence our poor man, not himself recognizing why he craves stimulation, will seek it and get it. He will forget his troubles after a few drinks, and no amount of literature and no number of lectures on the evils of the drink habit will still that gnawing in his stomach, nor prevent him from taking comfort in the only way that he knows when the pains of dyspepsia seize him. Because dental caries is so insidious in its onset and so exceedingly common, the general public and philanthropic people in particular, do not seem to appreciate its extent or the evils to which it gives rise.

This is your day and your opportunity. You must come forward and instruct the laity, and especially those who are laboring for the poor and the criminal classes, on the necessity of doing something for the teeth of these unfortunates, and you yourselves must be willing to supply the skill and labor needed. After many, many years of neglect our government and the English government also are just appointing dentists to look after the teeth of their soldiers. Dentists ought to be appointed not only to the army and navy, but to all jails, asylums, and especially reformatory institutions, where the young and partly grown are detained. To neglect the teeth of the inmates of such institutions is a crying evil whose magnitude is but dimly seen by the wisest, and apparently not thought of by the average philanthropist, not to mention the politician.

Valuable preliminary steps have been taken, mainly, I believe, by the dentists, but only the fringe of the work has been touched. Let us join hands. Let us make the movement which is already shaping itself so well forcible and general. I know how the best men among you feel, and I am sure that whatever you find in your hearts to do for the good of humanity and for the advancement of

the healing art, you will do; and you shall have the hearty support and sympathy of your medical colleagues and of thinking men and women everywhere.

You will show the world at large that dentistry is not purely a mechanical art, but a learned profession, and that dentists are both willing and able to do their share to help the downcast and the unfortunate in the way in which only dentists can help them.

“In Faith and Hope the world will disagree,
But all mankind's concern is Charity.”

Dr. R. H. M. Dawbarn.—First of all, let me apologize for having arrived so late, which was not at all my intention. I was delayed at the last moment, as we sometimes have to be, and I am particularly sorry to have missed the papers, save the last. The last paper was by a gentleman whom I have met often and whose eloquence I greatly appreciate. It was a paper that struck home to the very root of this subject. Before I say anything about the hospitals, just a word about this subject of an acid dietary. It is a fact not altogether thoroughly recognized that a diet including vegetable acids is not necessarily followed by an acid saliva. On the contrary, a diet containing vinegar or lemon-juice will cause an alkalinity of the urine, and if it will do so with one secretion I am inclined to think it will do so with the saliva. I do not think we all recognize the value of vinegar as an article of food. It is an historical fact that the Romans, at the time of their supremacy, furnished a daily ration of vinegar to their soldiers; which is the reason why the soldier at the cross was able to give vinegar to the dying Saviour.

As to the hospital question, I do not know that I need to tell you what my sympathies are. The work that I have done in behalf of having dental surgeons appointed to our largest hospital in this city speaks for itself; and what I can say will simply be reiterating what I have already said. The general crux of this whole question is this, Are we to consider ourselves (I use the “we” here partly in the editorial sense and partly because I am an honorary member of this body),—are we to consider ourselves as part of the medical profession in the same sense as the rhinologist, the laryngologist, or the ophthalmologist, or are we to consider ourselves as a distinctly separate profession? It does seem to me that it is in the interest of all parties concerned that the dentists should merge their individuality into that of the medical profession, and to con-

aider themselves as one specialty of that body. I am very sure that this is the destiny of the profession, and that those who oppose it will gradually be swept into the small minority. There is no question but that a man may be an excellent dentist and still not be a physician; but I think it is for the best interests of dentists to be physicians first and dentists afterwards. Every dentist should command two degrees, first the M.D., and second the degree in dentistry.

In my work at the City Hospital I have again and again been struck with the deplorable condition of the teeth of the city's poor. Most of them have decayed teeth and many have ulcerated roots. During the last administration I undertook to induce the Commissioner of Charities to permit me to order tooth-brushes whenever I wished to prescribe them. I tried to convince him that the patients would recover much more quickly from their various medical or surgical ailments because of improved digestion if this were done, and that therefore the city would be in the end the gainer. But I could not induce him to see it in that light. He said that there were several objections, not the least of which was that the patients would in the majority of cases rise up in rebellion; that if they, by improved mouth hygiene, increased their appetites, there was still more trouble, because he was then having all the work he could do to induce the Board of Estimate and Apportionment to scrape together enough food to keep body and soul together. It seemed something after the plan of Mrs. Squeers, who gave the boys brimstone and treacle to keep down their appetites. But this is looking at it from a jocular stand-point. These poor fellows, it seems to me, deserve the services of better men than physicians or surgeons unequipped with your special knowledge. There is not a medical man upon the whole board of this largest of all our hospitals who is able to treat properly such troubles of the mouth as have their origin in the teeth. I determined to reverse this condition of things, and succeeded in inducing the board to appoint two dental gentlemen to the board. Then came the difficult part of what was to follow, and that was to give them equal rank with ourselves. I am certain that the only reason why I succeeded was because both these gentlemen, Dr. Deane and Dr. Bogue, are physicians. I would have been in the hopeless minority if I had endeavored to have men other than M.D.s appointed, however able they might be as dentists. It is the only hospital in Manhattan in which a dentist has a seat and a vote in the board. Even the

pathologist of the various hospitals, always an able physician, is not given a vote. But in the City Hospital the dentists now each have a vote.

Now, gentlemen, the question arises whether these dentists are honoring themselves more in accepting the service and its duties or punishing themselves more; but there are two sides to this question. They are giving up a great deal of valuable time, which means money. Dentists have never done that heretofore in the hospitals, but it seems to me, as specialists in medicine, they should recognize their responsibility to the poor, that noblest attribute of our profession, in that we are so willing to give our time to charitable work. I am on duty five months in the year and I give three entire afternoons a week without any recompense whatever; but this is no more than every visiting surgeon does; for there is not a hospital in America, so far as I know, where the visiting physicians or surgeons receive one penny. The dental members are to be on duty all the year, one day a week, which is roughly in the same proportion. They can doubtless, if desired, have assistants appointed to cover the vacation period. I wish to congratulate this society in finding among its members a gentleman who was willing to step forward and give his valuable time. The First District Dental Society is equally to be congratulated. I hope these gentlemen will continue to maintain their positions, even at the great personal sacrifice required.

Dr. H. W. Gillett.—I have much appreciated the three papers we have heard to-night. It has been my privilege to put into the hands of one or two gentlemen connected with hospitals a paper on this subject presented some years ago by Dr. Newton, and I think it has served a very good purpose. The problem is a very large one. When it is possible, and we know it to be common enough, for people of wealth and refinement in the city of New York to come into our offices with mouths in a condition which necessarily means disease of the whole system, when these people in the hands of the very best physicians in the city as their private patients can still show this condition, it must be a fact beyond controversy that the diseased conditions of the poor of our hospitals are influenced by the filthy conditions of their entirely neglected mouths. There should be an awakening on the part of the medical as well as the dental profession to the need of our working together. Dr. Newton is one of the comparatively few physicians who have given the con-

ditions of the mouth careful attention. The extreme septic conditions frequently found in the mouths of surgeons and trained nurses is worthy of attention.

I think nothing has been said about the necessary limitations of the work that dentists can do in the mouths of hospital patients. There is more work needed in the mouths of the poor of any city than all its dentists can find time for if they do nothing else. Where are we to begin, and where draw the line? Shall we be satisfied with simply producing a cleanly condition of the mouth, the mere cleansing, and the relief of pain? If so, we must destroy a great many possibilities of usefulness in these mouths. The point has often been made that many of these people cannot even command the time that is necessary for these operations. This will perhaps raise another question,—Can we do more for the younger people? Perhaps we can simply clean up the mouths of adults and give more attention to the younger generation, with an age limit of sixteen or eighteen years. Can we not do some preventive work for these children, with the hope that later they will be able to get into the hands of a private practitioner.

The question of time is one that the medical profession find it difficult to understand. An hour barely serves to begin a simple case for the dentist, while a physician may often prescribe for ten or twenty in the same time. I do not think the dental profession unwilling to undertake charitable work. I think the question before us is to find the opportunity, and I have faith that our profession will do its whole duty.

Dr. W. St. George Elliot.—The subject, of course, is a very broad one, and one that I have always had a great deal of interest in. Dentists, as we know them, are good men. They are just as willing as the medical profession to give their time for the good of mankind. The medical profession does not understand the position in which we are placed. It is a point in this matter to learn what our duty is, for when we know our duty we can do it. I applied to St. Mary's Hospital to see if I could be of any service. The attending surgeon was not particularly encouraging, but he had no serious objections. They raised three or four hundred dollars, and the outfit was secured. I began work, and for two years kept it up. The amount of work to be done was enormous. Ninety-five per cent. of those children had decayed teeth. My idea was to treat the

children in the same way that I would treat my own patients. I would fill cavities and clean where necessary. The English surgeons have confined themselves largely to extraction, and that is probably as far as we can go. Probably ninety per cent. of the people do not take care of their teeth. I do hope that this question will have some practical application, but it seems to me that there are many difficulties. It must certainly require a man with a fundamental knowledge of medicine to be of service to a hospital, and I do hope that none but thoroughly competent men may receive hospital appointments.

Dr. J. Adams Bishop.—I have brought with me some appliances illustrating a field to which the dentist is especially adapted, in connection with hospital work. These are all splints which have actually done service in the mouth in cases of fractured maxillæ. These cases all represent charity work. I remember one case that appeared to me about seven o'clock in the evening saying that he had broken his lower jaw and wishing to know what could be done. I gave up my night's rest and placed the splint in position next morning. He wore it with comfort for six weeks, when he had it removed, the fracture having healed. I believe this is the most rational and successful way of treating these fractures, and that the majority of such cases can be treated in this way. The first case of this kind was presented at the New York Academy of Medicine in 1863, by Dr. A. L. Sands, who read a paper on the subject. The paper was very favorably discussed. That was in 1863, and since that time I have seen no reason to change my method of procedure in these cases.

We are of great use to the medical profession, as our good friend Dr. Dawbarn knows. There are cases of disfigurement which, after going through our hands, go into their every-day life with the contour of their faces so restored that very few would know what had happened. I think if we would mingle a little more and learn to know each other a little more it would be mutually beneficial.

Dr. Dawbarn suggested one thing that is very useful in a hospital, and that is a tooth-brush. Now, I have a method which is very simple and which I have recommended to a number of the hospital nurses as a substitute for a tooth-brush. It is this thin paper which I have here, by means of which the teeth can be wiped off very successfully.

Dr. E. Darwin Reed.—This work is much harder for us than for the physicians. I have been connected with dispensary work since 1894, and am now in the Polheraus Memorial Clinic, Long Island City Hospital, where there are four other dentists. We have had a struggle to get this branch where it belongs. In the first place we find it difficult to get the physicians to turn over cases which belong in our department. Then one's patients do not get the same care in the hospital we would give them. Besides, it is more difficult for us to get the patients to let us do anything for them other than to remove the immediate cause of pain. I have asked some of them to come to my private office to have their teeth cleaned (free); they did not take interest enough in the matter to come. It seems as if we have to educate the physicians as well as the patients in this branch before we can hope for any degree of success.

Dr. C. A. Brackett.—The subject has interested me very much. The dental profession has been criticised for not doing more charitable work. It has been said, and perhaps truly, that without considerable rendering of gratuitous service to those in need we are not worthy to be accounted members of a liberal profession. But the practice of dentistry is different from the practice of most other specialties, and it is particularly different from general practice. For the sake of the comparison of the dentist's work with that of the physician or general surgeon I have in mind something like this. Take, for instance, the ordinary ward in a hospital. Say there are twenty-five patients more or less in one large room to be visited by the general practitioner. There can be no combination of circumstances more favorable for the visiting physician than this arrangement. The patients are there together. The attendants and nurses have recorded at brief intervals the developments of the cases, so that it is necessary for the visiting physician to spend only a small amount of time with each patient, glancing over the records and giving to the nurses directions which they are to carry out in the continuance of the treatment. In this way he is enabled to attend to the twenty-five without consuming a great deal of time. To make fit comparison with this the dentist should simply see patients in connection with examination charts which had been prepared previously by others, and his own work in the case would be ended when he had directed others what operations they should perform. The general surgeon comes into the amphitheatre to his patient, who has been prepared by others in every particular. The patient's

clothing is arranged, sterilization and etherization accomplished, and he is placed upon the table. All the instruments and appliances are laid out, and as they are successively needed trained assistants put them in the operator's hands. The surgeon performs an operation of very considerable extent and moment,—one of the many marvellous things which have become every-day affairs in recent times,—and the instant the last stitch has been put into the wound he is ready to go, and in most instances that I have seen he does go. The nurses and attendants do the rest. Of course he has examined the case beforehand, made his diagnosis and planned the operation, and he supervises the case afterwards. A similar statement would be more or less true of the specialties generally. But suppose a dental clinic established in the ward of a hospital. The first patient that comes in in the morning has in his mouth the need for attention in the way of dental caries, exposed pulps, alveolar abscess, and pyorrhoea alveolaris sufficient to require the dentist's attention for an aggregate of several solid days of time; and there is no other way in which this service can be rendered than by the dentist's personal labor, if he is to render service equally efficient in his department with that which the physician and surgeon with their many trained assistants accomplish for their patients. It seems to me that this is the situation. It is not much of an exaggeration to say that a single tooth in a condition of such disease as is not rare may require very much more time, effort, and skill on the part of the dentist than a capital operation requires of the surgeon.

The general surgeon who operates in a case of appendicitis needs to be skilled in his special line. He must know the anatomy and the pathology of the parts to be operated upon; but for such an operation, accomplished usually in less than an hour, when he does not do it gratuitously, he gets a fee for which the dentist will work many days, not to say weeks. It is perfectly right that the surgeon should get the higher compensation. The responsibilities are greater, the consequences of incapacity or mistake are vastly more, and there are other thoroughly good reasons why the surgeon should be paid as he is. Doubtless the relation of surgeon's fees and dentist's fees to each other is about as it should be. The point I seek to make is that the surgeon, on account of his larger fees, on account of acquiring experience and gaining and maintaining a reputation, and on account of the prestige of hospital connection,

is better able to give considerable portions of his time to gratuitous service than is the dentist. There is a difference. Now, regarding the doing of dental work gratuitously. It seems to me the only practical way of doing such work in a way to adequately meet the needs is in connection with the clinics of our dental schools where there are a large number of learners to do the work. Under these arrangements it is practically the case that each party gets the best of the bargain. Generally speaking, the quality of service is vastly superior to what this class of patients would get from private offices to which they would go. The students are themselves benefited by operating under the supervision and practical teaching of the capable instructors; and so when they graduate and begin private practice the experience which they gained through this system of gratuitous service to those in need becomes one of their best qualifications. Now, I earnestly feel the desirability of the dentist doing his share of charitable work, but, as I have said, circumstances are more favorable for physicians and surgeons in this kind of work than they are for dentists. However, it cannot be said that dentists do not do charitable work. They do much charitable work. Every conscientious dentist has patients whom he serves gratuitously. And, again, any one who has anything to do with the relieving of human suffering does a great deal of involuntary gratuitous work, work not intended at the time of its doing to be gratuitous.

If dental clinics are to be established as departments of hospital work, the question arises, To what extent can the service be carried? A visiting dentist on a hospital staff would of course be expected to treat cases of actual suffering in connection with the teeth, to make and apply interdental splints in cases of broken jaw, and generally to perform the minor surgery of the region within which pathological conditions of dental association arise. In a hospital of small size service to this extent would not need to be regular, and it probably would not be heavily burdensome to a dentist who had some leisure; but the maintenance of a regular out-patient dental department affording to all poor and worthy applicants who came full care of the mouths would be a large undertaking.

In Newport we have an excellent hospital. One of the Board of Trustees is here to-night. I hope that we shall hear from him later. The hospital trustees are very desirous of making the institution as largely useful to the community as they can. For years they have

maintained a special clinic for the eye and one for the ear, each in charge of a skilled specialist. The trustees feel that if they could establish and maintain a dental clinic suffering humanity would be very much helped. The great difficulty would be to secure competent dentists to do the work. Throughout the year there are in Newport twenty-two thousand inhabitants and sixteen dental practitioners. In the summer there are some thousands more people and four more dentists,—twenty dentists in all. Almost or quite without exception these dentists have full practices. They are men who are very busy, and most of them fill various positions of trust and responsibility, so that they are giving a good deal of time to the service of the community through other channels than their professional work and those dictated by immediate selfishness. It is hard for a dentist who cannot meet in his office all the demands which are made upon him by intelligent, appreciative, well-to-do people to turn such away in order that he may gratuitously serve those less well able to understand that the service is needed. To do for those of the population of the city who might demand gratuitous service all that dentistry can do for those in need might fully occupy all of the time of all the dentists of the place. However, although this is a serious problem, it cannot be said that its solution is impossible or improbable in the near future. Far greater difficulties than this presents have been overcome in numberless instances.

I think that it is the idea of the managers of the Newport Hospital at the outset to make the dental clinic when established a channel of advice and instruction concerning what ought to be done in the care of the teeth both personally and by the dentist, rather than to undertake to give at the clinic all the service which might be needed for full conservation of the organs.

Dentists should be appreciative of the kindly and brotherly spirit with which they are met by the practitioners of general medicine and surgery, and they are appreciative. Certainly in the present state of our specialty, with our limited and incomplete education, it is generous of them to recognize our special attainments in our special work, and it is an honor to be associated with them on anything like equal terms in a public institution for the relief of suffering.

Dr. G. L. Parmelee.—It has been a great pleasure to be here to-night. I came not to talk, but to listen. My experience with

hospitals has been very limited and mostly in connection with the making of splints for fractures. It seems to me that the time is not ripe for this work in hospitals, as there is not sufficient encouragement, but I can see how we could be of great value to them, by simply relieving suffering, if in no other way.

Dr. D. A. Fuller.—I was connected with the Long Island Medical College Hospital, and I think the thing that impressed me most was the way in which the young medical students were glad to come in to my clinic and get information regarding my department. Of course, many of them would practise in the country where this practical knowledge of dentistry would be of great service to them.

Dr. C. D. Cook.—I would simply like to call attention to the fact that since the organization of the dental college in Baltimore, the first, I believe, in the world, dentists have used every endeavor to separate their specialty from the general science of medicine as far as possible. This has been the case until comparatively recent times. Now, in England the most far-seeing men of the profession opposed this idea of independent dental colleges with the result that there was established the London Dental Hospital. In this hospital students are educated with the medical students, along the lines of anatomy, physiology, surgery, pathology, and the various branches of medicine. They are students together, they come up for examinations together, and receive their L.D.S. along with the medical students, and for this reason they come more naturally to be associated with the medical men in hospital work. In this country we have nothing like it until later times. The dental education has been, until comparatively recent years, entirely apart from medicine. The dentist has been taught in this country, as we all know, that he is the broadest and best of men, and that what he does not know is not worth knowing. As mechanical men they are very clever, but as scientific men they simply do not compare favorably with medical practitioners, and I think we have ourselves to thank for this, and if our relations with the medical profession is not what we would desire, it is because we have not used our best efforts in that direction.

Dr. Leo Green.—It has been my experience in connection with hospital work that the medical staffs are very willing to accord us recognition, but there is always an obstacle in the lack of funds, so that it is necessary not to do missionary work among the physicians,

but among the wealthy men who endow hospitals. I think when the value of this work to the poor is appreciated this difficulty may also be overcome.

Dr. Flanagan.—I am reminded here of the story of the mate and the captain. It was the mate's duty to keep the log, but as he was frequently intoxicated for days at a time, it fell upon the captain to perform this duty occasionally. Upon recovering from one of his sprees, he found, upon examining the log, this entry made by the captain: "The mate is drunk to-day." He immediately remonstrated with the captain, whereupon the captain said, "Well, it's true, isn't it?" "Ye-es," replied the mate. "Well, we will let it stand," said the captain. The mate went away with a thoughtful air. A few days later, as the captain was examining the log, he discovered this entry. "The captain is sober to-day." Upon questioning the mate, he was met with, "Well, it's true, isn't it?" "Yes, I suppose it is," replied the captain. "Well, let it stand then," said the mate. So I feel like letting everything stand right where it is.

I believe one gentleman spoke of preliminary education. The question of education is so broad that it will never be settled in this world. There is no one system of education that has reached perfection. I do not believe that dentists are more ignorant than physicians. We are all ignorant, in a strict sense.

Regarding the question of acids. We are all groping in the dark regarding this question. There is no doubt that lactic acid does have some effect upon the teeth. The fundamental principle we have not yet discovered.

I would like to ask one question right here: Is it the degree that makes the practitioner, or is it the knowledge? I claim that it is the man and not the degree. There is no specialty or no one system of education that has a mortgage on all the knowledge of the world, because if they had they would foreclose it within twenty-four hours and keep it for themselves. The degree certainly is of no value unless there is an underlying education to bring about results. It has been said that dentists cannot help in hospital work unless they have a thorough knowledge of medicine. I dispute that most emphatically. The world is coming to understand that no man can do many things with his fingers until he has formed a picture in his brain. The arm that moves the world to-day in surgery is not that of the man who works with his brain alone. He is the man

who forms the picture with his brain and then does it with his fingers. The man to-day who does the world's best work in dentistry is not the man who tells you how to do something. He is the man who is able to originate and also to perform. It is just the same in dentistry as in surgery. There are many questions coming within the scope of the dental practitioner where his advice would be of great practical value to the physicians, as the treatment of antral troubles, dental abscesses, necrosis, etc., and this advice would be especially valuable in connection with hospital work.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the Academy was held at Young's Hotel, Boston, on Wednesday evening, May 7, 1902, at six o'clock, President Bradley in the chair.

The minutes of the previous meeting were read and approved.

President Bradley.—This evening we are to have the pleasure of listening to a paper entitled "Amputation of the Palatal Roots of Superior First Molars for the Prevention of Antral Abscesses," by a gentleman who was associated with Dr. Harrison, of Philadelphia, some time ago, and is now a resident and in practice in this city. I have the pleasure of introducing to you Dr. Isidore Lett, D.D.S., of Boston.

(For Dr. Lett's paper, see page 784.)

DISCUSSION.

President Bradley.—The discussion of the paper we have listened to is to be opened by a guest of the Academy. I have the pleasure of introducing Dr. Timothy J. Reardon.

Dr. Reardon.—The item interests me from another stand-point than a dental one, in this way, that I, being a nose man, look at it from that end of the science. I was interested in the doctor's paper because he suggested a method of treating the antrum which, to my mind, may be practical, instead of sacrificing the teeth, as

is done to-day by the surgeon; or, at least, as I do. I always recommend, first, the taking out of a molar, for the simple surgical reason that the drainage is the best. I thought as he read his paper that perhaps if the palatal root was large enough, and could be removed surgically by a dentist, it would answer the purpose and save the tooth. As I take it, a dentist will do about anything to save a tooth; or, at least, he should; but a surgeon has no hesitancy about taking it out, or ordering it out.

Now, about diagnosis of the antrum. It is very well to probe through the dental foramen into the antrum experimentally, in treating a tooth; but still I feel that there are other methods of finding out, and perhaps they should be used. It is a very simple matter to pass a canula from the floor of the nose into the antrum, and I think it should be done. There is practically no risk about it; there are very simple rules about it, and anybody could carry it out.

As to the hard cases of antrum disease,—i.e., those that will hang along for a year or more,—undoubtedly in a great many of these antrum cases that last so long there is some bone disease. Perhaps the entire wall, as in osteomyelitis acuta, may be carious, and it has been found that necrosis of the outer wall of the nose can exist, as in syphilis and tuberculosis; so there is no question that trouble in the other parts can exist without being especially connected with the teeth. It is surprising how often antrum diseases exist. There is hardly a death from infectious disease where pus is not found in the frontal sinus, and generally in the antrum, for the simple reason that the antrum is so placed with its natural opening that the frontal sinus empties practically into it, or in the great majority of cases it does that. If you find an antrum, it may be simply a receiver for the pus from these other cavities. Again, if the cavity is not well ventilated, healing will be retarded.

Tumors of the antrum are quite rare. Many of them are oedematous granulations. A tooth will be carious, and the bone will give out these large excrescences, sometimes as large as a cherry, and originating in a diseased tooth.

That case mentioned by the doctor suggested to me that this palatal root may present conditions that it would be well to study. Men interested in it could carry on special investigations which might be valuable.

Another thing suggested to me was the passing of this probe

through the root into the antrum. It was related to me by a very distinguished man, with whom I studied abroad, that a lady was accountable for the discovery of the antrum. She was using a gold toothpick, which disappeared, and Highmore, observing it, began to study this cavity. Probably he did not give us a great deal of knowledge about it, but apparently he was the first man to investigate it thoroughly.

I think at one time most antra were thought to be of tooth origin, but I think that is a very erroneous idea. Perhaps thirty per cent. of them are. During the influenza epidemic ten years ago we knew nothing of the ethmoidal and sphenoidal sinuses, except that the eye men here and there found diseases of them. But we do not wait to-day for sinus diseases to rupture externally.

Another thing which I would like to talk to you about, is neuralgia. We have a great deal to do with it. It is often caused by the teeth. I am pleased to say to you that dentists hesitate a great deal to-day about operating and removing teeth for *tic douloureux*. Very often these teeth are absolutely sound. I have seen cases myself where there is some mysterious cause for the pain; I have seen, within the past few weeks or months, a few cases. I was told one day by a nerve man, while riding on a car, that he treated one of these cases with iodide of potash, and it got well. I saw two cases: to one man I gave iodide of potash, and it cleared up. This man also had Rigg's disease of the teeth, but they had never been removed. He gave a history of syphilis. The other case was also syphilitic, and he responded to the same treatment.

These things should be thought of before any action is carried out in regard to removing teeth. The medical profession is against it to-day as much as the dental profession was ten years ago. I think the advanced men hesitate always about removing teeth. Other causes may have been looked for, but it is still a mystery in many cases to-day as much as ever.

I do not believe, gentlemen, I have anything more to say to you, except one thing, that has lately been observed, and that is in relation to peritonsillar abscesses caused by a carious molar tooth, principally of the upper jaw. Several cases have been reported. I have never seen one myself, but henceforth I shall look for it. I always seek for carious teeth in any suppurative condition of the nose. I believe there is some connection between diseases of the mucous membrane of the nose and the teeth. Just how the two are

connected I cannot state, but it exists, and the combination is so frequent that it has got most of the nose and throat men to thinking that there is some connection. I dare say, if you will watch, you will find hardly a child that during the eruptive stage of the teeth does not have a good deal of suppurative or catarrhal condition of the nose. I usually pass it by, and the chances are it will clear up very shortly, and it generally does.

I think that is all I have to say to you, gentlemen, on that subject.

President Bradley.—The subject is now open for general discussion.

Dr. Fillebrown.—The excellent paper of the essayist brought to my mind the amputation of the palatal root of a molar to relieve an abscess and save the tooth. It was the year I attended the Harvard Dental School, 1869. Dr. Keep was then dean. One day he showed two or three of us in his office (by the way, we occupied his office quite as much as we did the Dental School building) a molar tooth in his own mouth with the palatal root amputated. It was done by his brother quite a number of years before, and the tooth had remained strong and good. Not many years after that he died, and I presume the tooth remained good unto the end.

It interested me very much then; consequently, I have repeated the operation in a number of instances, and always with success. Dr. Keep spoke of other cases in his practice, but how generally it has been practised I do not know. We have not much literature on the subject, either because it has not often been done, or because it was considered so simple and reasonable that it has not been discussed. It certainly is a very desirable operation.

I remember a case of necrosis in Dr. Keep's clinic that was quite interesting. A young girl, about ten years old, had necrosis around a bicuspid tooth. It was attributed to the application of arsenic. She came in one day when the sequestrum was just ready to be removed. The old doctor thought he could help her to be relieved of the pain. I remember he asked her to breathe deeply, had her repeat it several times, and then he said, "Just hold your breath a minute;" and while she held her breath he passed an excavator up and drew out the sequestrum, and the patient did not flinch. That gave me an inkling of what has since developed into a fine way to overcome the pain and dread of slight operations.

Dr. Reardon spoke of the direction of the infundibulum and

its form from the frontal sinus to the antrum. I think it will be found that I was the first one that had found out or had mentioned that fact in the matter. Many others, Dr. Cryer among them, had found out that they could go into the antrum through a hole in the alveolus and reach across it, and then pass up and reach into the frontal sinus. That is a good deal like being able to put a pole into the window of a room and pass it out through the opposite door. But the fact that the infundibulum is a trough with a wall that rises up high on the nasal surface and conducts all the secretions from the frontal sinus down into the antrum, was, I think, not recognized before.

He makes a good recommendation to be careful about condemning the antrum too soon, for we may find that it is the frontal sinus that is at fault. A friend of mine sent a patient to me one day, with evident trouble in the antrum. Upon investigation I found it to be the frontal sinus. Opening that, I found it filled with a jelly-like substance. Proper treatment of the sinus soon removed the secretions and relieved the antrum.

There are some forms of antrum trouble which I think are better relieved by opening through the fossa. If you have any extended morbid growth in the antrum that you need to remove, it is rather hard doing it through the alveolus, although generally I have been able to do it that way, and have done so in most of the cases I have had.

I remember one case that came to us in the clinic at the Harvard Dental School, showing the persistence of trouble with the antrum; and also emphasizing the fact that Dr. Reardon alluded to, that trouble is not always confined to the region of the tooth, even if it has its origin in an abscess on the tooth. This patient had necrosis, including the alveolar walls of the upper incisors and the left cuspid and bicuspid. The teeth and sequestrum were removed, which left, of course, a good opening into the antrum. The case bothered me for nearly a year before I could get the antrum healed. In the most distal portion of the antrum persisted a little spot which secreted pus for a long time, and it required many applications of strong carbolic acid before it would heal up. I diagnosed the condition by winding a probe with cotton, and gradually found the angle needed to reach the spot without friction on the sides. Then I would carry it into the place and hold it for a moment, remove it carefully, and by noting the spot on the

cotton I would be able to locate the spot, and about its size. I remember it persisted at about the sixteenth of an inch across for a long time.

Necrosis does not enter very largely into the discussion to-night, but a case that appeared at the clinic last Friday is quite interesting and instructive. It had this bearing; it enforces the necessity of more accurate knowledge of the possibilities of dental practice and a more keen recognition of the limits of dental service and of dental preservation. This woman came into the clinic with six or seven front teeth so loose that she had to tie a string around them to hold them in. She was sent there by a neighboring operator, who did not wish to assume the responsibility of a decision as to what to do. There was extensive necrosis which was seriously endangering the patient's health. I removed the teeth at once. The sequestrum had not separated, so I passed my forceps around and nipped off all the roughened alveolus. This should have been done before. I just wished to emphasize the fact that we as dentists oftentimes try to do too much.

There was another case in the clinic last Friday, sent through the advice of a mutual friend, where the upper third right molar had been removed some months before. She had had trouble in that region for some time previous to the extraction, and the trouble still persisted; pus and blood kept dropping away from the socket. It had been treated over and over again, and yet had not got well. I could not feel anything out of the way, but the second molar looked dark. I found it was filled with a cotton dressing. It had been treated for a long while. I also found by a casual remark that repeated attempts had been made to stop up the roots, and every time swelling and pain had ensued. I advised its extraction, for I believe that second molar was the cause of the trouble. I have learned since that it was extracted, with the result of finding that all three of the roots were abscessed and considerably absorbed. Of course, one of those abscesses had been discharging through the seat of the third molar all this while. The other abscess had not opened externally, and consequently when the attempt was made to plug it up it made the trouble. There was a case where it was a great mistake to save the tooth so long. It was due to the patient, to the science of dentistry, and the sensible application of it that it should have been removed long before.

You remember, a few years ago, Dr. Sexton, of New York,

wrote an article and published it, in which he took the ground that too many dead teeth were saved. Many cases of ear trouble were caused and continued by the presence of these dead teeth. I remember Dr. Frank Abbott and others took up the cudgel, and Dr. Sexton was used rather roughly and with considerable ridicule. I am satisfied that Dr. Sexton was right, and that to-day there are teeth being kept in the mouths when in all reason and righteousness, so far as the patient's interests and the interests of the science of dentistry are concerned, they ought to be removed.

Dr. Drexel.—I want to endorse, from my experience, the essayist's remarks about the use of hydrogen dioxide. I do not believe it has the healing quality about it. I do not believe it should be used in the antrum, or even in indolent ulcers. I think it retards healing.

I am a worshipper of the salts of silver. I have had beautiful results from its use, and in it we have something that is bland, no violent action, and the mucous membranes take kindly to it. It can be used in pretty strong solution; and, in fact, in ulcers can be dusted on, without getting up any action, such as carbolic acid produces, for instance. I think salts of silver will bear your investigation.

President Bradley.—We should be very glad to hear from any one on this subject.

Dr. George T. Baker.—I have just one thought I want to express, in regard to the saving of teeth, and that is, we have all noticed that in a case of alveolar abscess where there is no fistula, it is sometimes very difficult to effect a cure, but where there is one, it is usually very much easier done. Where there is no fistula, I have found it a great help to make one through the gum. And in making one of that kind, I have found that a drill which seems to work better than any other is a perfectly smooth drill. I have tried it with an ordinary round bur, and have found that the bur will catch in the tissues and give considerable trouble; so that a perfectly smooth drill, like this that I have, is better. These have been used a good many times, and they are worn down. They ought to be a little longer; they were longer originally. They are perfectly smooth, just an ordinary drill; one is for the right-angle hand-piece. I will pass them around.

Dr. Williams.—An eminent surgeon once remarked at one of our meetings that it was formerly thought that the easiest way

to dispose of any obstacle was to throw it away, as Dr. Reardon intimated is too often done in dental surgery. It is the simplest way to dispose of a thing. But I think a little more thought of preservation of a tooth, if it is valuable, a little more preservation and knowledge of the ways of correcting the ailments of the roots of the teeth, might save a great many roots and teeth. This one method of amputation, for instance, gives good results in many cases by proper treatment. The question should be decided, I think, somewhat in relation to the value of the tooth; if it is valuable, every effort should be made to save it.

Dr. Fillebrown.—I do not wish to be misunderstood. I would not sacrifice a tooth until every means to save it had been exhausted. But after a while, as in this case of last Friday, where the trouble had continued for months, and there was no prospect of making it any better, then I say it is not right to keep it there, to the injury of the patient's health.

I wish to ask Dr. Reardon whether these cases of sympathy between the teeth and the nose were between the back teeth—i.e., the molar teeth—or the bicuspid and the six anterior teeth? Abscesses from the six anterior teeth, or from the bicuspid teeth, especially the first, very seldom, I think, interfere with the antrum.

I know I was treated with a little derision here in this Academy one night some years ago, when a gentleman had a case of abscess on the lateral incisor, or central incisor, and could pass a probe, he said, for an inch or two into the antrum. I raised the question that I thought the probe did not get into the antrum, and it caused a smile from him and several others. Now, gentlemen, I am sure to-night that in those cases it will not ordinarily go into the antrum, but the abscess will burrow through back between the plates of the palate bones, pressing both ways, and form a cavity as big as some antra. I know that very evening I cited a case that I had where I had passed a probe in the length of my little finger, and yet I was sure then, and am sure to-day, that it did not go into the antrum at all. The nervous relation between the six, eight, or ten anterior teeth and the floor of the cavities of the nose is very close, and it is not strange that troubles on those teeth should affect them. What I want to know is, whether Dr. Reardon has been able to distinguish between the molar and the anterior teeth?

Dr. Reardon.—I will state that in the last case I saw in which

there was no antrum it was the molars, and chiefly the second molars, on both sides that were affected.

And in connection with this separation of the nose, I cannot state (because we have not got that far) whether it is due to absorption through the lymphatics, or due to some disturbance in connection with the nerves.

Here is a case I took a note of a short time ago. (Reads note.) It does not give just what teeth were involved, and that is one of the dangers of taking short notes from editorials,—*i.e.*, to be accurate. If I ever wrote up the subject, I would look up these cases and find just what teeth were involved. It just shows that there are a lot of things that need investigating which are on the border line of dentistry and rhinology.

Dr. Fillebrown.—That brings a case to my mind that I had within a few weeks, which is so much to the point that I must take the time to refer to it. A gentleman had had trouble with a right superior cuspid, on which there had been an abscess for a long time, and the dentists were all trying to save it, and for months, yes, more than that, for two or three years, they had been keeping it along. The minute they closed it up, pain would follow. Finally, they took the tooth out, and it was apparently well for quite awhile. Presently he began to blow pus from his nose, and that went on for four or five months. Two or three times he had the antrum opened, supposing the trouble was there, and they found no trouble whatever. The trouble was as I diagnosed it in the beginning, the remnants of that old abscess on the right superior cuspid tooth, and it had remained there and worked through and was discharging into the nose. I treated it on that theory, keeping the thing open until it healed, and it proved the cause of the trouble. So that oftentimes when there is pus occurring through the nose, we ought to look out and consider whether it is one of the anterior teeth that may be in trouble, or whether it is the nose itself.

Dr. Reardon.—I would like to state that in diseased conditions of the nose it has been my practice to tampon with a strip of gauze, generally soaked in peroxide of hydrogen. Invariably I find that if any of the teeth are filled, and generally, so far as I have been able to observe, even molars, they will ache if they are in that condition. That has been my observation. I could look it up in my notes and give more definite information.

Dr. Werner.—Speaking of the abnormal condition of the antrum, we must also take into consideration the abnormal condition of the roots in that locality. Yesterday I had a case where good judgment dictated the extraction of the right superior second molar, which had no buccal and no palatal roots, but simply the average root of a very small normal bicuspid. How ridiculous it would have been to attempt to amputate roots that did not exist, though appearances in the mouth indicated distinct palatal and buccal roots.

Dr. Brackett.—In connection with this minor surgery of the teeth I may mention something which I learned a few months ago from Dr. George H. Ames. It is a method of giving escape to the products of inflammation about the apex of a closed root, and this in advance of any perforation which nature could make, thus very much shortening the period of suffering. Usually by percussion and pressure in different directions we may determine which particular root is the seat of a developing abscess. The procedures are, first, to benumb with cocaine the gum overlying the affected root; secondly, to plunge through this gum over the apex a small round burnisher which has been heated so as to make actual cautery; thirdly, with an engine drill or bur to perforate the alveolar wall. The cocaine makes the operation almost painless. Unlike a lance cut, the burned perforation in the gum is followed by no hemorrhage. You see the bare process at the bottom of the opening in the gum, and are able to direct by sight the action of the drill.

This method may be one of the resources in the small class of cases in which pericemental troubles develop with teeth whose pulps have been removed and canals and cavities filled with materials which it is not feasible to remove. In the one case in which I have followed this method, the tooth, notwithstanding unusual complications, has been saved, and is now doing comfortable service. The instrument with which the gum is burned should be a small one; otherwise there is after-suffering from the burn, and the repair is too tedious. The closing of the gum any way after the burn is likely to be even slower than is the case when an alveolar abscess is opened with the engine gum trephine suggested years ago by Dr. William H. Rollins.

President Bradley.—If there is no further discussion upon the subject, Dr. Lett will close the discussion.

Dr. Lett.—I should like to first answer Dr. Reardon's argument in regard to draining an abscess which would empty into the antrum, ventilating that through the alveolus, followed by the extraction of the palatal root. In the majority of those cases which I have seen there is more or less of the carious degeneration of bone. In most cases, when that is removed, there has been so much taken away that it would leave very little foundation for the teeth, and I have always advocated extraction, for fear of the recurrence of this trouble.

In regard to the dioxide, I should like to say that whenever I use it in cases of cleaning out parts surrounding an abscessed root, or anything similar, I add about ten grains of bicarbonate of soda and make a saturated solution in water, and add about half an ounce of the dioxide; and I find that that overcomes the unpleasant and caustic effect of the dioxide.

In regard to making fistulas for treating teeth, or draining abscesses at the roots of those teeth which will not succumb to ordinary treatment, I use the same method that Dr. Baker has described, except that I use the spear drill that White has in stock; and I have been very successful; probably not as successful as he has been, but it has answered all my purposes. It is an ordinary spear-pointed drill.

In regard to this subject of *tic douloureux*, I remember a very violent case of a man's attempting suicide on account of the excruciating pain, for which I tried phosphorus, one-twelfth grain doses, watching the patient very closely, and tincture of chloride of iron. This treatment cured the patient.

In regard to upper tonsillar abscesses, I have met quite a few cases, and in my experience most of them have been caused by impacted wisdom-teeth; and a common point of diagnosis between an abscess in the tonsil as a direct infection in the tonsil gland itself, or from a wisdom-tooth, is that when the tonsil is not involved with any dental trouble, the patient can open and close his mouth freely, with little or no pain; but where it results from an impacted wisdom-tooth, there is more or less ankylosis of the jaw.

I have a case in direct antipathy to Dr. Fillebrown, in regard to an abscess in the frontal sinus. I saw a case in consultation with a physician a short time ago, in which this patient complained of severe pain from neuralgia, and also pain in the region of the frontal sinus. From the right eye there was an overflow of tears.

I do not know whether that was caused by the closing of the nasal duct, or from over-stimulation of the lachrymal gland. I found the right first molar loose. Perhaps I should not have known there was any trouble there, but I passed a probe through the tissues in between the roots, and I felt satisfied that it was an abscess of the antrum; of course, there being an indirect connection between the frontal sinus and the antrum, very often found there when there is an abscess in the frontal sinus. It was a delicate question, because this doctor had sent this case in, and he pronounced it an abscess in the frontal sinus, and with no complications. I felt sure that if the tooth was extracted the patient would get relief. So he went back to this dentist and compelled him to remove the tooth, and immediately there was a flow of pus, and the unpleasant symptoms disappeared.

Dr. Werner.—Second molar?

Dr. Lett.—First molar. I was looking over some notes to-day, and I came across a case which Dr. J. D. White, of Philadelphia, treated, which was published in the *Dental Cosmos*, in regard to antral abscesses, or, at least, pus in the antral cavity caused by the buccal roots of a second molar. The tooth was explored, and the bulbous portion of the pulp and the buccal filaments were dead, but the filaments in the palatal root were still alive. An application of arsenic was made in that, and the filaments successfully removed, without any pain. Dr. White then extracted the tooth and found that there was no opening between the palatal root and the antrum, but through the buccal alveolus he passed into the antrum. Whether that was caused by an abscess on the end of this root, and burrowing through the alveolar process into the antrum, or whether, as he thought, infection resulted from coming in contact with the pus from the nose of a pet horse which he went to see frequently, he does not state very definitely, but he makes the suggestion that an infection came from this pus to the antrum.

In regard to saving teeth, I saw a very interesting case, about seven years ago, of a woman being brought into the hospital with a fracture of the superior maxillary bones. There was a quantity of pus there, and Dr. M. H. Cryer made an effort to save this by opening freely and draining out the pus, and working the parts and together wiring them in place, which resulted very successfully. He scraped off the edges of the bone, and had very good success with the case, which was discharged in about three weeks.

President Bradley.—Is there anything further to come before the Academy? I am sure that I express the feeling of every fellow of the Academy when I say the thanks of the Academy are due to Dr. Lett and Dr. Reardon for the paper and the discussion. All those who are in favor of expressing this same sentiment will manifest it by saying, "Ay."

Voted.

Adjourned until October meeting.

CHARLES H. TAFT, D.M.D.,
Editor American Academy of Dental Science.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, March 25, 1902, the President, Dr. S. B. Luckie, in the chair.

A paper entitled "The Value of Cataphoresis" was read by Dr. Louis Jack.

(For Dr. Jack's paper, see page 781.)

DISCUSSION.

Dr. J. A. Woodward.—I have listened with a great deal of pleasure to Dr. Jack's paper. He has covered the subject thoroughly from a practical stand-point. I commenced the use of cataphoresis in May, 1896, and have made, up to the present time, three hundred and forty-six applications at an average of about fifteen and three-eighths minutes for the actual passage of the current. A little more time is required in placing the rubber dam and in fixing the electrode in place. In cases where a local anæsthetic is required, I have nothing which will produce so deep an impression upon the dentine as cocaine cataphorically applied. The patients requiring it are usually those who are unable or unwilling to bear much pain. Sometimes it is a delicate woman, at other times a child; or, again, an older person. I do not think I have ever failed to produce such an impression on the dentine as will reduce its sensibility to some degree and enable the patient to bear the operation with reasonable comfort. If more time be taken, one can nearly always produce

entire insensibility. Success seems to depend almost entirely upon confining the current directly to the cavity.

There is a different degree of response to the electrical current in different people. In the teeth of the same individual there is not much difference, but in the mouth of different individuals there is a great difference, and that is probably the reason why many men have failed with cataphoresis. Where a small amount of current gives pain they do not persist long enough, and, of course, they do not get the desired effect. Some of these extreme cases take forty minutes of current application. As to the possible damage to tooth and pulp, I have never seen it to any degree. Nirvanin seems to be quite as effective as cocaine.

Dr. E. T. Darby.—I have been very much interested in Dr. Jack's paper, and know that any statement that Dr. Jack makes is thoroughly reliable as well as interesting. I have had very little—I may say, no experience in my office with cataphoresis, but I have known of others who have had such satisfactory experiences that I am tempted to relate one case that came under my observation a year ago. A lady had in her mouth at least thirty cavities to be filled. She impressed me as being of a supersensitive organization, and I concluded that if she became my patient I would have quite a siege with her, because many of the operations were large. She was about to be married, and asked to have all the work done within a month. It being impossible for me to do this, her *fiancé* suggested that she employ his dentist at New York. This was done, and during a period of thirty days she sat two hundred and three hours in the dentist's chair. I said to her mother that I expected to find her pretty well used up. She came back and showed me what had been done. Her mouth had been most beautifully attended to; every operation had been made with gold, and many of them were very large indeed.

I said to her, "I am surprised to find that you look so fresh after so many sittings within a month," but she replied that the dentist had used cataphoresis throughout the work, and that she had suffered no pain whatever.

The teeth were not in the slightest degree hypersensitive to thermal changes after the operations.

I then began to think that cataphoresis was a very good thing. I have seen two patients since then who have been in the hands of this gentleman, and they report the same result. Now, this testi-

mony, coming from the patients, ought to be reliable, for they have no reason to state other than the truth. My own opinion of cataphoresis has been that too much time is required to produce the desired effect, so that I have not felt able to give it to my patients. Possibly I have been a little cruel in causing pain which I might have avoided by applying cataphoresis. I have found cases in which I have obtunded sensibility by using Robinson's remedy, or alcohol and hot air, and recently I have used boiling carbolic acid, and cocaine on cotton, as recently suggested by Dr. Jenkins. The first contact of the carbolic acid to the cavity causes a little pain, but it is immediately followed by a soothing effect, and in these cavities where there is a large amount of decomposed dentine I think the result is instantaneous. In the removal of that soft, leathery decay from the deeper portions of the cavity I use Robinson's remedy, followed by alcohol and blasts of warm air, and I have very little complaint on the part of my patients when it is necessary to do any cutting. As I said before, in any statement that Dr. Jack has made I would have the most absolute faith.

Dr. E. C. Kirk.—I am very much interested in the subject of Dr. Jack's paper, but my experience has been quite limited in the use of cataphoresis for obtunding sensitive dentine. The most frequent use that I have made of it has been in the treatment of pulpless teeth for removal of discoloration. I would like to ask a question which Dr. Jack may be able to answer for me. Is there a point at which he would limit the application of cocaine by the cataphoric method, with a view to avoid disturbance of the pulp by the electric current itself; in other words, the danger of the electrocution of the pulp, as it has been called? It seems to me that in careless hands the method might possibly result occasionally in destruction or impairment of the function of the pulp. In fact, the case reported by Dr. Darby, in which such extensive gold operations were performed, there being no after-hypersensitiveness, sounds a little ominous as to the condition of these pulps. I would like to know if in the technic employed in the treatment of cases of this kind there is any means of determining when enough has been done and not too much; if there is any variation in the resistance of the tooth during the process of anæsthesia, which would indicate a possible deleterious effect upon the pulp.

Dr. Jack.—It would probably be better to answer this question as well as I may at the moment it is propounded. I may say to

Dr. Kirk that in my first experience I was guided more by the time than by my instrument, and I would often stop after fifteen minutes, although I may state here that the shortest application which produced complete anæsthesia lasted five minutes. There is a class of persons whose teeth are much irritated by a feeble current. It is with these we find the highest degree of sensitivity and the greatest need for this mode of treatment. With these electrical irritation sets in at about four hundred thousand ohms' resistance, or when, as measured by the ampèremeter, one-twentieth of a milliampère of current is passing through the tooth. When the instrument shows one-tenth, there is no difficulty, and the operation will go on with considerable facility; but where the first show is only one-twentieth or one-fortieth of a milliampère, the time will be longer. I move the controller to a point of slight irritation; then go back one pin, and the irritation ceases. I then move it along a few pins at a time. On the appearance of the pain limit I go back. I now usually go clear around the circuit until all resistance is removed, and in that way I find complete anæsthesia. I have never found any after-disturbance, and think there is comparatively little danger of disturbing the pulp. It is more difficult, in many instances, to anæsthetize a pulp than to anæsthetize the most excessive sensitivity of the dentine. In some instances I have been able to anæsthetize a pulp and remove it in fifteen minutes, but in other cases a longer time is required.

Dr. Kirk.—Did you notice any difference in the rate of current flow, or a difference of amperage, as the dentine became saturated with cocaine? I mean, do you notice that the amperage changes when the controller-arm is placed at a definite point and a certain amperage is at first recorded?

Dr. Jack.—The amperage remains constant until the voltage can be increased by lessening the resistance. It will be found often that at first we can advance only very slowly because of the electrical irritation, but as we get towards the half-distance we advance more quickly.

Dr. Darby.—How about subsequent sensitivity to heat and cold?

Dr. Jack.—If the cavity was not carbolized, there would be high sensitivity to cold.

Dr. Darby.—How do you account for the case I mentioned in which there was no sensitivity after treatment?

Dr. Jack.—Probably carbolic acid, which coagulates the

albumin of the fibrillæ, was used to prevent after-response to thermal change.

Dr. H. E. Roberts.—The time required depends upon the amount of cocaine introduced, and that in turn upon the amount of current passing through the tooth. Naturally more cocaine is introduced with a one-tenth milliampère than with one-twentieth, hence at the latter degree of flow twice the length of time would be consumed to attain a result.

I have never seen the amperage change at a given point on the controller. The lessened resistance from the increased amount of cocaine in the dentine would be so infinitesimal that it would be impossible to measure it when taken in conjunction with the resistance of the body added to the resistance of four hundred thousand ohms. If the electrode is not held perfectly immovable, you can get a variation in the milliamperage. I have not used cataphoresis of late, principally upon the ground that it takes so much time; but at one time I experimented with it thoroughly, and I believe that I have never had a failure to obtund the sensibility of the dentine with it, provided I could apply the rubber dam and keep the cavity dry. The patient has to be susceptible to the influence of cocaine. I have been compelled at times to stop the application simply because of the nervousness of the patient. In one case I thought the patient was going to faint, but she did not. One of the objections I held was the difficulty of getting the patient to understand that there was nothing to be feared. When I had an intelligent patient who understood it, I got along satisfactorily. I have used cataphoresis in bleaching, but have not done so for several years, as I can get equally good results without it. I have also used cataphoresis in obtunding a sensitive gum when I desired to make an artificial fistula. The burning from the direct current seems to me different from the action of any other cauterization. By wrapping a plug of cotton around the electrode point, saturating that with cocaine, pressing gently against the gum, and gradually putting on the current, you can cauterize the gum, so that it will appear very much like boiled meat. There will be a depression which you can easily go through. The non-sensitivity does not extend to any great distance from the cauterized portion. I have had blisters on the back of the hand from cataphoresis and the scars did not disappear for months. For that reason I would apply the cathode only to the palm of the hand, where the skin is better

able to resist burning; also, the sponge should be kept well wet. I have never seen pulps devitalized by the use of cataphoresis.

Dr. Woodward.—To prevent leakage of the current it is safer to apply the rubber dam only to the tooth to which the application is to be made. The electrode should cover as much of the floor of the cavity as possible, for the reason that a large electrode anæsthetizes a larger area of dentine than a smaller one. Cotton which has been saturated with the cocaine solution should be tightly packed around and between the electrode and the dentine to prevent contact or any movement.

The current is increased as rapidly as the pain limit will permit, until one-tenth milliampère is recorded. I usually wait at this amperage for five minutes, during which time there is not any change in the reading of the milliampèremeter. A large amount of current is not required. One-tenth to two-tenths of a milliampère will relieve or reduce sensitiveness sufficiently if one will have patience. With a meter the amount of current is shown; this, with the time of application and the loss of response of the tooth to the current, will afford a guide as to the point at which to limit the application. As to blistering any patient's hand, I cannot conceive how that could be done in ordinary cataphoric work.

Dr. Roberts.—That happened from a cataphoric application for bleaching, when I placed several layers of blotting-paper on the back of the hand and the cathode upon them. I was bleaching three teeth at one time, and the current was turned on for nearly two hours. The patient did not complain, but merely said that the hand felt a little warm. That was the only indication given.

Dr. Jack.—In this connection I might state that my cathode has always been placed on the cheek, unless the person has too much adipose tissue, when I would place it in the hand.

Dr. Roberts.—You are using much less current than in bleaching. I was using thirty volts.

Dr. William Trueman.—It seems to me that the question propounded by Dr. Kirk is a very important one in this connection. The question has been asked repeatedly in our journals, "Who to-day uses cataphoresis?" Now, there is a reason for this, and, as I understand it, that is that pulps died under the operation. Whether this was due to the fact that the men who used the current with cocaine did not understand it, or whether they carried it too far, the fact is well understood that pulps have died.

It is important to know when the paralysis that is effected by cocaine and the current should be stopped. The sensory nerves become paralyzed, and if you carry that to a great degree you stop the nutrition of the pulp, and it must die. That is the theory, and I believe it to be correct. If this association, through Dr. Jack, Dr. Woodward, and those who use it, can remove the objections of the profession to cataphoresis, it will be a good thing. I have not only great faith in Drs. Jack and Woodward, but in cataphoresis itself. I do, however, want to know, as Dr. Kirk does, how far to carry it in order to obtain good results and avoid the ill effects of it.

Dr. Jack.—In my experience I have not known of a single instance in which a pulp has been disturbed or died as a result of the application. I think that much of the good result of the work of myself and Dr. Woodward is due to the properties of the apparatus we use. It is capable of better control than any other one with which I am acquainted. There are two points bearing on the subject that will meet Dr. Trueman's objections, and which indicate that there is not much liability to the disturbance of the pulp. I have found repeatedly that sensitivity would recur within five minutes after I prepared the cavity. In some instances, when I prepared a cavity on one day and the patient came to me on the next, I found all parts of the margins of the cavity extremely sensitive, notwithstanding the fact that immediately after the preparation of the cavity it was dressed with carbolic acid. That would indicate that the pulps have not been disturbed. It proves that the pulp, in a large majority of these cases, is not the structure impressed by the cocaine. It is the dentine itself, because, in quite a number of instances, while we may prepare the cervical and lateral walls of a proximal cavity, it will be found at the occlusal margin that there will be some sensibility, showing that the current seeks the lines of least resistance, and by going in a direct course has failed to act upon the occlusal margin of the cavity. The impression is not made primarily on the pulp, unless it happens to be very nearly exposed, but even if it is I have not found disturbance. I can understand how persons at the beginning of the application, with even a good controller, may by suddenly throwing on quite a large amount of current produce injury of the pulp. At a given point the amperage remains the same without any elevation. I may state further that at the first point of electrical irritation the

amperage will be the same with ten, fifteen, twenty, or twenty-five cells. The only difference is that the resistance must be greater as we increase the number of cells, but the amperage will be the same, although it must be stated that these ampère meters are not exactly fine; they are not capable of registering the most delicate moves. I use twenty-four per cent. cocaine, sometimes only twelve per cent. My method of using cocaine is to have powders containing one and one-fifth grains. The controller has one hundred and thirteen stops, or fractional volt selections, and a total voltage of less than twenty-four volts. I usually use fifteen cells, or about thirteen volts.

Dr. Woodward.—I have filled some of these cataphorically treated cavities with gutta-percha, and have removed it within twenty-four hours, six months, or three years. I find the teeth apparently as sound as any tooth, as far as sensitivity and response to temperature changes are concerned, and many times would not know that the tooth had been treated cataphorically until I referred to my record. I have frequently made an application to a cavity in one surface of a tooth, relieving the sensitiveness entirely, and found that a cavity in another surface remained as sensitive as if no cocaine had been applied. If the pulp had been anesthetized, this would not be.

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Editor Academy of Stomatology.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

(Continued from page 772.)

DISCUSSION ON DR. LATHAM'S PAPER.

(For Dr. Latham's paper, see page 719.)

Dr. M. L. Rhein, New York.—I do not think there is any more important subject in our specialty than that of the pulp. It is impossible for me to discuss Dr. Latham's paper as it deserves to be discussed from merely hearing it read yesterday. It is so replete with pertinent inquiry and valuable data that it requires a very careful study of the details.

The large percentage of pathological conditions of the pulp is

a point conforming closely to clinical practice in dental work, and is highly important in our consideration of the pulp question. When we consider the nature of the pulp, we appreciate the difficulty in finding a normal, physiological pulp after maturity. With the congestion of the vessels there is a departure from the normal pulp. I have long been under the impression that the average dental practitioner has a very small conception of the enormous percentage of pulp-nodules in various stages of formation in pulps which they remove. These pulp-stones unquestionably go through a series of formation. In our microscopical work we have learned to differentiate the nodules resembling little pointed diamonds and the seed-like formations. The fact brought out by Dr. Latham, that these nodules are found at or near the apex in some cases, and in others towards the coronary portion, is also very interesting from clinical experience. My own theory is that they are largely due to inflammatory action that has proceeded from the exterior through the dentine. I have never seen them unaccompanied by external breaks in the enamel and tooth-structure. On the other hand, I commonly open a tooth upon a diagnosis of pulp-stones and find none until I reach the end of the root, and this in teeth without break on the outer periphery of the enamel. It seems logical that these nodules are due to the lime salts through some irritation in the blood-supply being deposited in the cell tissue. My discussion is not from a microscopical stand-point, but entirely from a clinical.

Dr. Latham spoke of the results of embolism in the arteries as a result of pulp removals and the trouble following such engorgement. The point I want to consider is, what relation has the removal of the pulp upon the circulatory condition of the peridental membrane? From clinical experience I believe that in many cases there has been no break in the enamel structure, but when the pulp-tissue is pathological there has resulted loosening of the teeth, elongation of the incisors, and pyorrhœal symptoms. This condition has been cured by the removal of such pulps. My own view is that the grave pathologic condition of the pulp interfered with the nutrition of the pericemental tissue coming from the dental artery. It does not seem unreasonable that through a perversion of nutrition due to a pathologic condition the pulp is affected and possibly the formation of pulp-stones fostered. Is it natural to say that the pericemental tissue is not deprived thereby

of its natural source of nourishment? and when we cut off the entrance of that amount of blood at the end of the root is it natural to suppose that the pericemental tissue should not receive the benefit of that additional nutrition?

I should like to ask Dr. Latham whether the glands she has had under observation show a physiologic or pathologic condition? In the use of the radiograph in dental work I have found in a large number of loosened teeth these glands well defined.

Dr. R. R. Andrews.—I am not in a position to discuss Dr. Latham's paper. I should want to read it carefully, and could not do it justice otherwise. I shall therefore speak of the tooth as we see it through the microscope. I believe the odontoblastic layer grows as the tooth grows down. We have a whole mass of hypoblastic and mesoblastic tissue, and the formation takes place nowhere near the hypoblastic tissue. What I fail to see is how the hypoblastic tissue can get in between there in the forming teeth. There is a great deal of discussion about the basement membrane. I do not believe there is any such thing as a basement membrane. We find a membrane in the dentine when it calcifies, and when the enamel is formed we find the same layer. That, to my mind, is the first stage of calcification, and has no appearance to me of being a membrane. I cannot see how it is possible in that tissue to get a hypoblastic tissue. I am not fully up in my reading; most of my work was done ten or fifteen years ago. This work is work for young eyes, and Dr. Latham will have to call a halt pretty soon if she wants to keep her eyes. I think it would be well to prepare a paper upon the points suggested in Dr. Latham's paper, because there is so much contained in it.

In regard to the calcification of the pulp. The pulp is over-irritated in some way from the cemental surface, and a cell within the pulp is stimulated and there is beginning calcification. This calcification irritates some other nerve-tissue and forms osteoblasts. This may be local or general. I have seen pulps in which there are little spicules of bone forming all over it and sometimes on the edge of the nerve through the odontoblastic layer. The fibre-cells which line the pulp, the pear-shaped cells, go only a little distance, but all the other cells take on activity, as in the deeper portions, and new tissues are formed. But, secondary dentine is not normal. The whole pulp in an elderly person may calcify. I believe it will in time be found that the nerve-fibre enters the dental canal.

Dr. Eugene S. Talbot.—In my dental histologic work it has been impossible to find many pulps which could be considered normal. Pulp-stones are common in teeth with exposed roots the result of interstitial gingivitis or pyorrhœa. We are now experimenting with the third molar tooth, which we can easily secure and can get them in all stages. The pulps are in a formative stage in most all of these teeth, and therefore I believe that better work will be done on the third molar, except where we extract the tooth for the correction of irregularities.

Dr. Andrews.—Dr. Rhein spoke of the immense number of pathologic pulps. We must remember that we see only those which we take out. The largest proportion of pulps are normal. That is a correction which I want to make.

Dr. G. Lenox Curtis, New York City.—It has occurred to me that little has been said upon the physical condition of those people from whom the pulps have been secured. And that opens up a subject which should be investigated. My experience is that the patients have histories of long illness, and that their physical condition is far below normal, yet I have felt that this observation was contradicted when I have seen patients who gave a history of perfect health from childhood and found these pulp-stones in apparently perfect teeth. I have observed these pulp-stones in old, diseased, and apparently normal teeth, and have found them of various kinds and sizes; some were just barely visible under powerful magnifying glass, and others filled the entire cavity.

Dr. A. E. Baldwin, of Chicago.—In all our investigations we must have a normal stand-point, and I can conceive how two people of like earnestness may arrive at totally different conclusions because of the starting-point of each. The medical student listens to the breathing of a patient and observes the general conditions. He should then be expelled from the sick room, and observe only those said to be in health, so that he may arrive at a perfect knowledge of health before examining disease. We are too apt to start on the observation of disease. We must know first the conditions in health.

Dr. E. A. Bogue, New York City.—Dr. Latham spoke against the too frequent extirpation of the pulp, taking the ground that the pulp was not only the formative organ, but that its persistence in life was the health of the tooth. Recently in operating I found a condition of senile decay. Later, asking my son the definition

of senile decay, he said he supposed it was a condition existing when the pulp-chamber had been filled or nearly so with secondary dentine, thereby depriving the tooth of its nourishment and of that feature which we call vitality. Hence the tooth breaks down readily. I think the answer bears upon the information given us by Dr. Latham and upon the advice of those gentlemen who advise extirpation at an early stage of the pulp in the apparently normal tooth. The remaining tissues of a tooth which has suffered extirpation of its pulp are placed in the condition of the senile tooth. I think we should emphatically condemn the too frequent extirpation of the pulp.

Dr. M. L. Rhein.—What is an early age? and What are normal pulps? are mooted questions, and the most important question is which is the lesser evil of the two. I think all dentists recognize the evil they must do in removing pulps for certain pathologic conditions, but they are committing what they consider the lesser evil. The dentist prefers to do that and preserve the stability of the root of the tooth, for as practical men we know that if we can preserve the integrity of the attachment of the root to the peridental tissues, as far as the crown of the tooth is concerned it matters very little. Dental art has reached such a stage that that part of the tooth can always be made presentable. I only want to present the point, Which is the lesser evil, to lose the tooth entirely at a very early period, or to preserve the root?

Dr. Andrews.—In regard to the using up of the odontoblasts, the question has been much discussed of the joining of the cells as the larger portion of the pulp and newly formed tooth closes in. I have seen them joining themselves, or thought they were. There are many points of that kind I would like to hear discussed, but I do not think they had better be taken up at this time.

Dr. Vida A. Latham (closing the discussion).—I am not discussing pathology. That could be better taken up twenty years hence. The point is, what is the tooth-structure based on? I make the argument that it is based upon the formative organ, the pulp. I am not discussing the formation of dentine, enamel, or anything else. I want to get back to normal histology, and I do not like such terms as myxomatous tissue. This is but beginning work. My time has been spent in collecting material. I have taken up the theories of the *function* of the pulp, not pathology. The pulp is a more important organ than we will allow. The nervous

mechanism of the pulp is not proved. The histological basis is not proved. Professor Paul and myself, I believe, are the only two that have made special efforts to prove that there is more of a basis to the pulp than most investigators have allowed. We have also gone to work to get the nervous mechanism, and I believe that the photograph which I showed demonstrated the vasomotor connection with the pulp. That, I hope, is practically put on a foundation, that is, microscopically, clinically, and photographically. The connection with the odontoblastic layer I am trying to prove, and have succeeded in tracing the nerve-fibres to that point, but have not had time to continue the connection into the cell. The work has been carried on for fifteen years which included the making of thousands of stains, and to-day it is imperfect.

Then the structure of these cells I have not taken up. I have taken up other people's theories and I have argued my paper on these, because to get back to the origin of the odontoblasts we must consider function and physiologic relations.

The connection of the pulp-stones I argued on Dr. Anderson's paper, not my own, and showed the photograph to prove her paper. I mentioned that in my sections these calcareous bodies were formed all the way through. The origin of these is another thing. If they are found, how can they be formed from the odontoblasts? I rather think they cannot be, unless we have the odontoblasts in this connective tissue working in a way we do not realize. I want my knowledge to be based on histology. I do not want the dental tissue with no other analogy in the human body, hence I have been working upon the origin of the odontoblast, the mesoblasts, and the function of the secretory organs, but I have not proved all the points. Further, I would say that a good deal of argument has been based upon pathologic conditions. This paper is simply to show you that when a man speaks of a layer of cells forming he speaks of hundreds of layers. The point of my paper is to prove the nervous relations, the structural basis of the pulp, the varieties of the odontoblasts, which is the true odontoblast, which the formative cell, and its vasomotor connection with the tooth, and then later take up the pathologic function. This work should be illustrated by carefully prepared photographs, and I hope to get something that I shall call normal to make a basis for the work.

DISCUSSION ON DR. TALBOT'S PAPER.

(For Dr. Talbot's paper, see page 701.)

Dr. Vida A. Latham.—I want to emphasize the value of comparative histology and anatomy. Dr. Talbot's paper has pointed out to me that there is some ground for my statements regarding the hypoblastic layer. He is considering it in the evolution of the pulp. He gives as his analogue the kidney, which organ until Heidenhain was little understood, but to-day is placed as a purely secretory and excretory organ. I think we will make a beautiful analogy between the protoplasm of the kidney and the odontoblastic layer.

Regarding the formation of enamel, the question comes up. Does enamel form after a tooth is practically made, or do we have a continued formation of enamel? I believe we do. The use of the dental irregularities apparatus shows this. It makes a dent or impression and by friction a small pin-hole, and you will find a projection of enamel. I believe that enamel does not always stop forming when it covers the tooth, any more than skin ceases to grow. In the rat the blood reaches the enamel. This is another point to prove the value of comparative histology.

Dr. Talbot (closing the discussion).—I have had this paper on my mind for a number of years, and I was led to read it at this meeting because a gentleman, in reviewing one of my books a short time ago, took exception to the question and answer, "Is degeneracy or arrest of development of jaws and teeth a cause of decay? Answer: Yes, it is the principal cause." Then I went on to say that it was a matter of record that teeth decayed more rapidly on the upper jaw than on the lower. The reviewer of my book said that that was not true. He stated also that the farther away from the salivary ducts the greater the decay of the tooth, therefore teeth decay more rapidly on the lower jaw than on the upper. It seems to me that that is rather a narrow way of looking at the subject, and is ignoring the constitutional cause producing decay. We must take up the evolution of the pulp, as Dr. Latham has said, as the principal argument. It is the pulp itself that we have come to study from its evolution to its histology in order to understand decay of the teeth. In taking a broad view of the decay of teeth and diseases of the alveolar process, it stands to reason, from the paper I have read this morning, that teeth are degen-

erated from the lower animals, in which series of animals we have teeth with open pulps, and these pulps having large cavities, the blood flowing to them keep them in a normal, healthy condition. As we ascend into the cycle of man the ends of the roots close up and they become to a certain extent foreign bodies; and here comes the point in regard to senile degeneration. The point is illustrated by a man whom I have in mind. This man is the editor of a journal, but on account of a change in the Administration he is appointed postmaster and has a double amount of work to do. He had been a patient of mine for over thirty years, and had until recently as hard teeth as ever before. They were like flint and without decay. In about six months after becoming postmaster, with the large amount of work upon his hands, he had neurasthenia, and as a result his teeth cut like horn and had a general pathologic appearance. This senile condition comes on in healthy people after forty years of age, and when in addition the nervous system is wrought up not only do the teeth decay more rapidly, but the other structures of the body give out as well.

The rudimentary enamel-organs we find in all the structures of the human as well as in the animal. There is no question in my mind but that Magitot and other investigators brought out the true conditions of these cells which Black calls glands, nothing more than rudimentary organs which would have gone to form extra teeth, as we find in some animals forty-two and seventy-two. These are the rudimentary organs which are not used at the present time on account of the law of economy of growth. In order to understand the histology and pathology of the teeth, we must study the evolution of the pulp. I do not see why that subject has not been taken up in our schools.

Adjourned to two P.M.

(To be continued.)

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION: SECOND GENERAL MEETING, HELD AT STOCKHOLM, SWEDEN, 1902.

INTERNATIONAL DENTAL FEDERATION.

Wednesday, August 19, 1902.

THE opening session of the second general meeting of the International Dental Federation was held in the Caroline Institute, Wednesday, August 19, 1902, with Professor Lindstrom in the chair.

Professor Lindstrom, in fitting words, welcomed the members of the Federation.

Dr. Elof Förberg then addressed the Federation in behalf of the local committee, expressing in eloquent terms the satisfaction of the Swedish Dental Society in having the Federation meet at Stockholm.

After these preliminary proceedings, Professor Ch. Godon, Paris, delivered his presidential address, as follows:

PRESIDENT'S ADDRESS.

MR. CHAIRMAN, LADIES AND GENTLEMEN,—As we are about to begin the sessions of the International Dental Federation, our thoughts are naturally carried back to our last and memorable meeting in the University of Cambridge, just a year ago,—a meeting the remembrance of which will never be erased from the minds of all who attended it. It seems to me that this meeting could not be more appropriately opened than by addressing our most cordial and respectful greetings to Sir Michael Foster, the eminent scholar who honored us last year by presiding over our gathering. It was at that session that we were invited by our friend and colleague, Dr. Förberg, in behalf of the Swedish Dental Society, to hold our present meeting in the city of Stockholm; and I can assure you that their hospitality is greatly appreciated by all of us. We should not forget that while our work has a scientific and professional purpose, it is also a task of peace and universal harmony, and under the auspices of what country other than Sweden could gatherings of this nature be more properly held? Sweden should

feel a proud gratification in the reflection that the name of Dr. Alfred Nobel, the object of whose untiring efforts has been to promote ideas of peace and universal fraternity, stands out among the contingent of learned men that she has furnished to the world. All scientific and industrial associations, the number of which can never be in excess, uniting periodically upon the same spot men from countries different in language and habits for the purpose of discussing scientific topics for the better development of the different branches of human activity, must be counted among the number of institutions that have contributed in the largest degree to inculcating peace and fraternal sentiments among men, and therefore we could not do anything more fitting than to place this gathering under the tutelary patronage of that great human benefactor.

We are happy to express to the Swedish Dental Society our heartfelt thanks for their kind invitation and for the warm welcome they have tendered us, but to Professor Lindstrom are we especially indebted for consenting to honor our association by presiding over its meetings. We should feel complimented that, following Professor Gariel and Sir Michael Foster, who were the presiding officers at the organization of the Federation and at its first meeting respectively, we should be able to-day to open our first session with Professor Lindstrom in the chair, and that under these auspices the Federation should step forward in the path assigned to it.

Our sessions beginning under auspices of this nature cannot fail to be successful. Delegates are present in considerable number, and the questions to be discussed are numerous. We are glad to find among the delegates the majority of those who took part in our last year's discussions, and no other body of men could be better qualified to treat of the general questions that are of foremost importance to the future of dentistry. Others have come to join our force; to them we extend our most cordial thanks. We wish also to express our appreciation to the members of the American Dental Society of Europe, as they will have a considerable share in increasing the importance of the session, first, because of the part they will take in its work, and also because they have consented to hold joint sessions with us and with the Swedish Dental Society,—reunions which will make of this week a memorable one, as during this extent of time it will undoubtedly be possible to treat of questions belonging to all the branches of our special calling. We

also thank the authors of the different communications for the earnestness with which they have treated the questions they undertook to study, and their reports will serve as a basis to the work of the present session.

Last year, at Cambridge, we had before us the completion of our organization, the adoption of a constitution, the appointment of the necessary committees, and the planning of our future line of work, as it was necessary to define the field of action of the Federation; also, to reassure all those who feared any interference on our part with national affairs; in one word, to limit the field of activity in which we could exercise our influence without fear of wounding legitimate susceptibility. Each country depends on its habits, historical evolution, and laws, and, as all these conditions differ greatly, our International Commission cannot pretend—as our colleague, Professor Hesse, of Leipzig, has stated—to do anything beyond expressing opinions and giving advices which have no real authority, but which have, however, a certain moral influence because of the standing of the members of the Federation, and may therefore be taken into consideration by those qualified in each country to voice decisions of legal power. Your functions are hence limited to that of a great international advisory council on dentistry. The discussions have been kept within the bounds of theory and philosophic generalities, and there is no cause for any one to complain that it should have been thus, especially when we recall Sir Michael Foster's remarkable address, in which he pointed out the most important requirements of the different kinds of preliminary education preparatory to the study of the various professions, that of dentistry in particular. He said that education should be fashioned after the manner of a cone, starting from a broad base and narrowing to an apex, for it is the conical bullet that has penetrating power. For each profession the cone should be different, should be fashioned in different ways, though in each case it should start from the same broad base. He indicated what this cone should comprise, analyzing the essential requirements for the dentist.

This admirable address was followed by one from an eminent surgeon of the same university, in which he defined, with as much authority as the previous speaker, the differences which should exist between the trainings of the physician, the surgeon, and the dentist, and in concluding affirmed the necessity for the dentist to be especially trained from the beginning to the end of his course

of professional studies, as had been previously asserted by Dr. Kirk, the dean of the faculty of dentistry of the University of Pennsylvania, and Dr. Brophy, the president of the International Commission of Education. Dr. Kirk insisted upon the importance of undertaking the manual education early in life, for a period quickly arrives in later years when such training becomes impossible. It was this fact which was already recognized by Sir John Tomes, the Nestor of dental education in England, as Dr. Kirk has called him.

Some members, Dr. Arkövy, of Budapest, among them, maintain altogether opposite ideas,—namely, that dentistry is a medical specialty similar to all other specialties of the healing art, and must therefore be taught under the same conditions as these specialties are. They claim that the preliminary education of the dentist should be of a purely medical character, that the candidate should be a holder of the medical degree, and that only then should he take a special course in dentistry. Others advance opinions favoring a mixed education taken from both the medical and dental curricula.

These theoretical discussions have given rise to three questions which the members of the Commission have been asked to treat. Some national federations have also been requested to discuss these topics, and it remains with the Commission of Education to draw from these discussions clear and precise statements that shall serve as a basis to our discussions, and if possible to bring about a general understanding among our delegates. But the object of the Federation is not limited to the study of the best system of dental education; public dental hygiene is just as important a reason for its existence, and it is this topic that presents the greater degree of interest to the public and to the various governments. The Commission appointed last year has prepared reports in which they devote especial attention to the present status of public dental hygiene in the various countries here represented. These reports have awakened an interest on this important subject, and new members have asked to contribute towards solving this problem of unquestionable value and importance. The Commission will have to outline its plan of work for the future by determining the questions to be examined and discussed in the following meetings by the aid of suitable reports, as has been done already in the case of the Commission of Education.

There is another question on which a report has been prepared.

It refers to the federation of dental schools. A proposition embodying this idea was presented at the Third International Dental Congress, where it was seriously considered. As a matter of fact, it exists already as a national body in the United States, and comprises more than two-thirds of the American schools. It has helped considerably towards the unification of the dental curriculum, and is a factor in the progress of dental education in that country. In France a similar federation is being organized. We all realize what a mighty influence such an international body would have over the great problem of dental education; if, while respecting the autonomy of national federations, it were possible for it to bring about the acceptance by all dental schools the world over of a uniform programme comprising a minimum number of studies embracing all the topics a dentist should be familiar with in order to deserve this qualification, and also in order to be able to practise his profession to the benefit of humankind. It is to be hoped that the discussions which will undoubtedly follow the voluminous report at hand will bring about the realization of this plan.

The work of the Federation during the past year calls for the appointment of new committees. We must also set right the basis of the Federation, which is formed by the different national federations, which unfortunately have not been organized as yet in a regular way.

Lastly, we must see to it that the different governments take an interest in the work of the Federation, appointing delegates to our annual sessions, so that they may be able to learn from official sources the resolutions which we may adopt and which could be taken into consideration for the enactment of new legislative measures.

Working thus, we will advance towards the Fourth International Dental Congress, the preparation of which has been intrusted to us. It is there that the dental world will be enabled to make a new inventory of the recent progress realized by odontological science.

If we are able during this quinquennial period to insure that the work of the Federation will be carried on regularly, if we can carry it to altitudes where ideas shall meet in peaceful controversies, to unite later on and collapse as the clouds do after a most terrific storm producing copious and fruitful rains, which finally result in abundant crops, then we may be able to retire with quiet consciences, leaving the future to others, feeling that we have not

wasted our time and that our efforts have been fraught with beneficial results.

Dr. Florestan Aguilar, the treasurer, then presented his report.

Addresses followed by Dr. Hesse, Germany; Dr. Harlan, United States; Dr. Harding, England; Dr. Franck, Austria-Hungary; Dr. Heidé, France; Dr. Guerini, Italy; Dr. Guldeberg, Norway; Dr. Frick, Switzerland; Dr. Morrisson, Australia; Dr. Royce, the American Dental Society of Europe; Dr. Weber, Finland.

Editorial.

THE VICISSITUDES OF DENTAL JOURNALISM.

EARLY in the preceding century the awakening spirit of fraternity and the desire of imparting knowledge of dental art and science led, in 1839, to the issue of the *American Journal of Dental Science*.

This became, considering the small degree of advancement of dental surgery at that time, a remarkable magazine, and it did a great work in moulding the sentiment and cultivating those then in practice. Had its course not been interfered with the probabilities are that it would have maintained its original character. It would have advanced with the development of dental science, and necessarily should have received the required support.

"In 1843 and 1847 the two dental depots then in existence here, conceiving the benefit it would be to them, assumed the liberty each to publish a dental periodical, by which they could secure a hold on the rising profession, thus combining the dissemination of literature contributed to them, and promotion of trade. The evident result of this movement, if not the intention, was the ultimate supplanting of the *American Journal* by offering the new journals at a much lower price."

At length other traders in dental goods came into the field, and, being interdicted from advertising in the trade journals, were obliged to publish their own. Their terms were the same as the others.

The next move affecting the interests of dental literature was

the increase in the number of dental depots, brought about by the great profit upon dental goods, each depot deeming it necessary to possess its own journal. These newer journals were put forth at one dollar per year, they virtually being respectable-looking trade-catchers. From the indications, these one dollar people have seriously impaired the interests of the higher-priced journals, and their houses as well. This condition has forced the latter to drop to the lower price. Thus the war among these competitors takes on a new phase. The logical result will be that to outdo each other none of them will be particular to collect their small price; thus dental journalism will be still more dragged down.

It becomes more evident that these journals are simply sugar-coated advertising sheets, which the manufacturers virtually give away rather than not have them circulated.

Ash & Sons' course has been more logical and honorable, in that they freely distribute their quarterly circular. This method will probably become the next step, in case the little dragons continue to eat into the vitals of the larger ones.

The fact becoming more clearly apparent as to the motive governing depot-journalism, the mask being thrown aside, it behooves all who have regard for professional respect and honor to cultivate appreciation of whatever effort may be made towards independent journalism. The dental profession in this country has largely lost its solidarity, and can regain its lost *esprit de corps* by cultivating the liberal principles which actuated the earlier makers of dentistry.

What is most needed is the moral courage to stand shoulder to shoulder in the defence of whatever is right and square in the present and for the promotion of that which is best for the growth of professional honor.

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THE MULTIPLICATION OF DENTAL ASSOCIATIONS.

IN the October number the subject of "Organizations, Present and Future" was considered in relation principally to national organizations, but that editorial failed to exhaust the subject, and possibly even a series of papers might equally fail to meet all that would be required to satisfy the most exacting. Indeed, it may

be assumed that individualization will, in all future time, bar the way to an agreement as to the best course to pursue in national, State, or local organizations. One set of persons view the social side as of great importance as a method of drawing individuals together and insuring a large attendance, hence every meeting begins or ends with a menu of supposed good things. There can be no valid objection to this method if the tickling of the gustatory faculty is not carried to the extent of making it primary and the mental feast a secondary consideration. To the man who attends meetings not for that which he may procure in the way of eatables, but for that mental exhilaration that comes to him through attrition with other minds, this method will not appeal; indeed, he may regard it as an evidence of degeneration in society work. To the writer it appears as a marked indication of a loss of scientific interest and as a tacit acknowledgment that dentists have reached a period when papers and discussions upon important topics have ceased to draw. It is feared this conception of the dental condition is unfortunately based on fact. The thought has unwillingly been forced upon the writer's mind that the organization briefly alluded to in the last number is bound to come before this century closes, an organization in which all the members will be influenced by one purpose,—that of advancement of the scientific side of the profession,—and this must necessarily include all the branches known under the name of dentistry. Such an organization can have no use for, and will not admit a place for, any menu, however enticing, nor will it be drawn away from the object of the gathering by outside inducements.

The tendency to separation is becoming more pronounced yearly, and is being fostered, largely aside from the banqueting method, by the fact that persons desirous of improving in special work, or in dentistry as a whole, have found it necessary to organize separate societies and confine their work to a limited area of thought and practice. Hence, while national, State, and local societies were considered amply sufficient a few years ago, and certainly did suffice for the needs of dentistry at that period, there came a natural reaction, an opposition to this generalization and commingling of subjects related, and yet in a measure antagonistic.

The first departure came when the dental colleges found it was necessary to organize independently of all other dental associations and to arrange for their own well-being, which could not be

accomplished in a national body as then organized. Then followed the formation of the Section on Stomatology of the American Medical Association, the members of which devote their time to the discussion of scientific topics, so called, and have nothing in common with the man interested in the practical details of his profession.

The formation of the association known as the "Institute of Dental Pedagogics" is another evidence of this segregating influence. It would seem that the National Association of Dental Faculties might very readily have covered all the subjects that this body meets annually to consider, but those interested in teaching problems thought otherwise, and a quite important body meets yearly with an enthusiasm that speaks well for the self-sacrificing spirit of the members and promises to be a source of great benefit to dental teaching in the future, as it has in the past.

The division of dentistry into specialties has resulted already in an organization of the "American Society of Orthodontists." This has had its second annual meeting this October in Philadelphia. It is not many years since the regulating of teeth was regarded as one of the least important of the operations the dentist was called upon to perform. Indeed, the dentist of the olden period held this work to be the most distasteful of all his proceedings. This now is all changed, thanks to the persevering efforts of Kingsley, Farrar, Angle, Jackson, and other advanced minds, and it has become the most important of all operative procedures, necessitating, in the opinion of some, a combination of all those interested in this work in a special organization. If this body will avoid the danger of regarding special methods as most important, to the neglect of principles underlying all operations in orthodontia, it must become a power for good in moulding practice. So far as the observations of the writer justifies an opinion, this seems to be the governing motive, and if this be continued one more organization has been founded to the advantage of professional work.

The question may be asked, however, Where will this end? Are we to have, in the future, the crown- and bridge-worker meeting, as a selected body to consider ways and means for the improvement of that method of practice? Will the prosthetic devotee eventually regard the Institute of Dental Pedagogics as too slow for the progress of his specialty, with the result of an association of

mechanical dentists being formed? These questions will, in all probability, find an answer in the near future.

The entire subject is one of interest to the active professional man, and not without some cause for anxiety. The effect of this multiplication of societies has yet to be experienced. It seems as though the result should be to the advantage of dentistry as a whole, yet when we come to examine into the effect produced through the division of medicine into specialties, the result is not encouraging to the average layman, and very possibly not to the broad-minded professional worker. Instead of the patient securing, as formerly, a more or less intelligent opinion from his family doctor upon a given ailment, he is now sent from "pillar to post," each one giving, it may be, the opinion that the case belongs to some one else, until, finally, the patient may consider himself or herself fortunate if, between the divided responsibility, he or she is not landed in the last resting-place for humanity. We are face to face with a similar but more limited condition of affairs. The shifting of responsibility has begun in earnest, and we have our special prosthetic workers; our crown- and bridge-workers; our nitrous gas specialists; our oral surgeons; our ceramic workers in inlays and "continuous gum;" and last, but not least, our orthodontists, and some of the leaders of this, the new-born of the specialties, insist on its practitioners giving up all other forms of practice and confining their labor exclusively to this work.

The effect which this multiplication of specialties, and consequently the organization of new and independent associations, will have upon general organizations remains to be seen, but in the opinion of the writer it will eventually be disastrous. The time and expense involved in attending meetings will be a serious matter for consideration to the average practitioner. He will soon begin to find it is not to his interest to attend the sessions of the general meeting. He drops out and ceases to come in touch with his fellows in other branches. As the years roll on he has practically become unfamiliar with the dental profession, and has ceased to be a Doctor of Dental Surgery, with all that this degree implies. This is already manifest in those who practise specialties in medicine. This is the serious side of this entire business. The increase of these organizations devoted to specialties in dentistry has already begun to produce this effect, and as time advances this must become more marked. The future alone can determine whether

this will be for the good or ill of dentistry. Let us hope it may be for good, but in any event it is bound to divide dentistry into many parts, rendering the work of the colleges more important than at any previous period, for there alone can the man or woman be trained into a composite in which all the parts of the profession will be moulded into one, and through which a graduate is made to acquire sufficient of all the specialties to enable him to give an intelligent opinion and to direct to practical good results.

AMERICAN SOCIETY OF ORTHODONTISTS.

THIS new Society, devoted to the consideration of orthodontia and related conditions, opened its second annual session at the Colonnade Hotel, Philadelphia, October 8, and extended through three days.

The attendance was not large, ranging from thirty to forty, but what it lacked in numbers it made up in interest in the work. The division of this branch of dentistry into a specialty has been too recent to expect an extended interest, and numbers could not be anticipated and, perhaps, not desired. Then, again, there is a large body of dentists, skilled orthodontists, who do not favor an organization specially devoted to this subject.

The present meeting, so far as the writer is capable of judging from a limited observation, entertained a broad comprehension of the subject, and the papers, upon the whole, were interesting, although condensation would have materially improved one or two.

Orthodontia, while old as dentistry itself, is still in the early stages of development so far as the determination of the principles governing it are concerned. No better illustration of these has ever been attempted than in the monumental work of Farrar, but even with this as a guide there is much still to be desired.

It was gratifying to the writer to observe that the active members were nearly all comparatively young in years. Their enthusiasm upon the subject speaks well for progress in this important branch of dental labor, providing there is not a too close adherence to special methods or narrow conceptions.

Dr. Angle presided over the meetings, which were conducted with dignity due to the subject.

Among those present and taking an active interest was Dr. Grevers, of Holland, on a short visit to this country. Dr. Grevers is much interested in dental education and the work which has occupied the attention of the *Fédération Dentaire Internationale* which recently met in Stockholm.

THE TWO COMMITTEES.

THE National Dental Association, at its annual session in August at Niagara Falls, invited the *Fédération Dentaire Internationale* to hold its annual meeting in August, 1904, at St. Louis during the Exposition to be held that year. This was accepted by that body at its meeting in Stockholm, Sweden, last August, and the holding of an International Dental Congress at St. Louis seemed assured. To effect the organization of this congress and have the general management, the following committee was appointed by the National Dental Association: Dr. Edward C. Kirk, Philadelphia; Dr. R. H. Hofheinz, Rochester, N. Y.; Dr. H. J. Burkhart, Batavia, N. Y.; Dr. Wm. Carr, New York; Dr. Waldo E. Boardman, Boston; Dr. V. E. Turner, Raleigh, N. C.; Dr. J. Y. Crawford, Nashville, Tenn.; Dr. M. F. Finley, Washington, D. C.; Dr. J. W. David, Corsicana, Tex.; Dr. Wm. Crenshaw, Atlanta, Ga.; Dr. Don M. Gallie, Chicago; Dr. Geo. V. I. Brown, Milwaukee; Dr. A. H. Peck, Chicago; Dr. J. D. Patterson, Kansas City; Dr. Burton Lee Thorpe, St. Louis.

The well-known names upon this committee tended to assure the dental profession in the United States that the bad management and friction which was well remembered as part of the experience connected with the "World's Columbian Dental Congress" would be avoided.

The *Fédération Dentaire Internationale*, upon the acceptance of the invitation, very properly appointed a committee to work with the one appointed by the National Dental Association. This was essential, that the *Fédération* should be properly represented and its interests protected. The persons selected to serve on this

committee were exclusively from this country. It is questionable whether this was a wise choice, for, aside from some personal objections, it would have been better to have distributed the membership in other countries, even though these, on account of distance, could not have been active in the work.

The appointment of this committee was made with an insufficient knowledge of conditions existing here, or it seems certain that certain changes would have been made. The result thus far has been dissatisfaction very openly expressed. This has been actively accentuated by the statement, presumed to be reliable, that the committee appointed at Stockholm has expressed a determination to take a leading part in the management of the congress. It is to be hoped that this charge may prove unfounded, for, if correct, it would reverse the usual order, and the invited would take precedence over the party extending the invitation. The National Dental Association, through its committee, should be the responsible party in the organization of said congress, and the committee originating at Stockholm should act conjointly with it, provided said committee is acceptable to the National Association. At present this does not appear to be the case, and the antagonism threatens a collapse of the whole scheme. This certainly would be an unfortunate ending of the matter.

There seems to have been some misunderstanding as to the intention of the National Dental Association in extending this invitation. From present indications it would seem that the members of the *Fédération Dentaire Internationale* regarded the meeting at St. Louis in 1904 as exclusively their meeting. Unless the writer failed to comprehend the proposal at Niagara, the feeling and intention there was to hold an International Dental Congress and the *Fédération* was invited to assist in the work. There is nothing to prevent the *Fédération* from holding its own separate meeting, and at the same time working for the Dental Congress, and probably this would be the best solution of the difficulty, for if it remains as at present, the friction engendered will be sure to wreck the International Dental Congress of 1904.

Domestic Correspondence.

PUTRESCENT PULPS: A CRITICISM.

OCTOBER 3, 1902.

TO THE EDITOR:

SIR,—In your August issue there appears an article the caption of which is, "The Value of the Wenker Rubber Jaw as an Aid in teaching Therapeutics," in which is related an incident which is certainly amazing to read in a journal of that character, and more so as it was written by a *teacher* of operative dentistry in this the year of grace 1902.

The incident in question I will quote as follows: "I have a case in mind which will serve to illustrate. A graduate from a prominent school who has been practising for two years treated a putrescent incisor tooth for several months without any success. The putrescent condition was of short standing, and grew worse from the treatment. It became necessary to treat the tooth every day to keep the patient comfortable. If the dressing were sealed in the tooth the patient invariably suffered severely.

"The young dentist applied to an older practitioner for information as to the cause of the difficulty. Upon questioning, it was learned that he had been using antiseptics that were irritating and easily dissipated.

"The older practitioner advised him what to use, but after a short trial the young dentist gave up discouraged and brought the patient to the senior dentist for consultation. Upon removing the dressing the cotton was found so offensive that the odor remained in the office for a considerable time after the patient left. The canal was washed and rewashed with dioxygen until the mephitic gases were scarcely perceptible, and then dressed with eucalyptol and sealed.

"The young dentist returned in a few days and stated that the patient had been very comfortable since that treatment. The technic of the treatment was a revelation to him. He learned what to use, but more particularly *how* to use it. He confessed that he had a great deal of trouble with putrescent teeth, and believed that he would progress nicely after seeing that demonstration."

Here we have it related that a *recent graduate* of a *prominent school* consulted an *older practitioner* relative to the *protracted treatment* of a *putrescent pulp*, all of which is written up by a *teacher* in another (we trust, prominent) college, and all this is given hearing by such a body of practical (?) men as the Southern Wisconsin Dental Society, and last, but not least, occupies space in such a journal as the *INTERNATIONAL*.

Thus it is shown that a "prominent college" still believes in and teaches that protracted treatment is necessary for putrescent canals; that one of the recent graduates still pursues the same course, having only still more recently learned the process; that the "older practitioner" also consumes his own time and that of his patients by such a system of practice; that a professor in another college (the relator of the incident) also follows the same lines; that there is no evidence of any other practice being followed by any member of the association in question; and, lastly, that the *INTERNATIONAL DENTAL JOURNAL* gives such an "incident" the benefit of its pages without a protest.

As before stated, here is a string of almost incredible statements, and had the article in question been written by some backwoods dentist, say from the swamps of Louisiana, and appeared in a "border" journal, it would not have attracted my attention, but the circumstances are decidedly different.

Now, Mr. Editor, how can it be possible that these college professors, recent graduates, and older practitioners continue at this late day to *treat* putrescent root-canals, and if so, why? Do they not know that *immediate root-filling* in just such cases has been practised *successfully* for at least twenty years?

If I were advocating any original method, I surely would hesitate before writing in this way; but such is not the case.

So far as I am aware, Dr. Cassius M. Richmond is entitled to the credit of this method; at least, he "starred" through the country some twenty years or so ago, *demonstrating its success* upon every hand, and for this have I ever been most grateful.

Trusting that interest on the subject is sufficient excuse for the length of this letter, I remain,

Very cordially,

[REMARKS.—The foregoing letter came unsigned, but as the letter-head contains the name of Dr. C. Edmund Kells, Jr., New Orleans, it is presumed he is the writer.

The article which is so severely criticised, and also the INTERNATIONAL for admitting it without a protest, was published in the August number and read before the Southern Wisconsin Dental Society in May, 1902, by Dr. Harvey N. Jackson, of Milwaukee.

The INTERNATIONAL has a standing disclaimer on its first page that it is "not responsible for the views of authors," and were it to protest against everything that does not meet the views of the editor there would be but a limited time for other and more profitable work.

It is unquestionably true that the treatment of canals with putrescent pulps has not yet reached a stage when any one can dogmatize as to methods. Immediate root-filling is advocated by many, and finds equally strenuous opponents. The question is too large a one to be discussed here, but it may be said that any man who advocates the *immediate* root-canal filling in *putrescent* cases, as suggested by the critic, has not yet learned the *possibilities of septic poisoning*, and the occupant of the chair of pathology who would teach such a procedure certainly has missed his calling. While this is true, there can be no question but that canals in which putrefaction and consequently septic matter is not present had better be filled at once, and in no case where putrescence exists is it necessary for prolonged treatment.—Ed.]

Miscellany.

TO REMOVE THE ODOR OF IODOFORM FROM THE HANDS.—The odor of iodoform may be removed from the hands by washing with a weak solution of tannic acid, by rubbing freely with chloroform, by bathing them in vinegar, or by ablutions in flaxseed-meal water.—*Journal of Medicine and Science.*

THE GREAT CORK-FORESTS OF SPAIN.—The *Scientific American* quotes the following from the *Boston Herald*:

"The cork-forests of Spain cover an area of six hundred and twenty thousand square miles, producing the finest cork in the

world. The forests exist in groups, and cover wide belts of territory, those in the region of Catalonia and part of Barcelona being considered the first in importance. Although the cork-forests of Estremadura and Andalusia yield cork of a much quicker growth and possessing some excellent qualities, its consistency is less rigid, and on this account it does not enjoy the high reputation which the cork of Catalonia does.

"In Spain and Portugal, where the cork-tree, or *Quercus suber*, is indigenous, it attains to a height varying from thirty-five to sixty feet, and the trunk to a diameter of thirty to thirty-six inches. This species of the evergreen oak is often heavily caparisoned with wide-spreading branches clothed with ovate oblong evergreen leaves, downy underneath, and the leaves slightly serrated. Annually, between April and May, it produces a flower of yellowish color, succeeded by acorns. Over thirty thousand square miles in Portugal are devoted to the cultivation of cork-trees, though the tree abounds in every part of the country.

"The methods in vogue in barking and harvesting the cork in Spain and Portugal are virtually the same. The barking operation is effected where the tree has acquired sufficient strength to withstand the rough handling it receives during the operation, which takes place when it has attained the fifteenth year of its growth. After the first stripping the tree is left in this juvenescent state to regenerate, subsequent strippings being effected at intervals of not less than three years, and under this process the tree will continue to thrive and bear for upward of one hundred and fifty years."

[The number of square miles the cork-forests cover in Spain and those devoted to the cultivation of cork-trees in Portugal are evidently erroneous, as the area of Spain is but one hundred and ninety-one thousand square miles and that of Portugal but thirty-four thousand four hundred and nineteen.—McCLAIN.]

FLIES AS CARRIERS OF DISEASE.—For forty years the writer has been struck by the fact that all animals hate flies with an intensity not explained by their suctorial or "biting" powers. Our domestic animals, even our draught animals, expend as much energy in keeping off the pests as they do in our service, or in getting food. Even

the most pachydermatous are no exceptions to the rule. If we observe an elephant, we are astonished at his constant watchfulness and exertions in keeping off the common flies whose suctorial powers are so feeble as to be utterly out of proportion to the energy spent. Might not bacteriology have got a hint here of service in discovering the etiology of disease? Did not nature long ago thus find out that flies might be the carriers of disease germs? Science is now advancing rapidly towards the same discovery.

The entomologist of the United States Agricultural Department, Dr. Howard, after long studies, believes that flies are often the active agents in spreading typhoid fever. The bacillus of Eberth has been found in flies, and if Dr. Howard is right, then the profession must educate the public and nurses, and so order hospital-construction and service that flies shall have no access to food.—*American Medicine*.

METALLURGICAL SKILL OF CHALDEANS AND BABYLONIANS.—A communication by M. Berthelot in *Comptes Rendus* shows that the Chaldéans and Babylonians were possessed of considerable metallurgical skill. A Babylonian statuette was found to consist of a copper alloy containing 79.5 per cent. of copper, 1.25 per cent. of tin, and 0.8 per cent. of iron. A statuette from Chaldea, estimated to be two thousand two hundred years old, was composed of nearly pure copper containing only a slight proportion of iron, whereas another Chaldean statuette, some four hundred years older, consisted mainly of an alloy of four parts of copper with one part of lead and a trace of sulphur.—*Scientific American*.

TREATMENT OF PULMONARY COMPLAINTS WITH AIR FROM LIMESTONE CAVES.—Victims of pulmonary complaints have heretofore been compelled to make inconvenient journeys to the higher altitudes in search of the pure rarefied air which is known to be so beneficial to them, but this is no longer necessary. It has been discovered that the air from limestone caves has all the characteristics of that of the mountains. This discovery has just been made use of in the location of a sanitarium near one of these

caves, and the air for the institution is supplied from the underground caverns. This establishment is at Luray, Va., and the system of ventilation is arranged so that each room gets its own supply direct from the cave. The air of these caverns is of a very uniform temperature and remarkably pure and free from all germs and dust particles. In the warmest weather the doors and windows of this institution are kept closed, and a comfortable temperature of 75° F. is maintained, in spite of one of 90° or more encountered outside.—*Scientific American*.

HOLDING PATIENTS UNDER THE INFLUENCE OF NITROUS OXIDE GAS.—Dr. F. M. Richardson, of Chicago, gave a very interesting two hours' clinic at the Northwestern Dental School on the use of the Hurd inhaler, for the administration of nitrous oxide gas. He extracted teeth for forty patients without a failure. Much to the astonishment of those present, he held his patients under the influence of the nitrous oxide gas as long as he desired, in several cases for five minutes or more.—*Dental Review*.

USE OF BEADS IN RETAINING RUBBER DAM.—At the annual clinic of the Alumni Association of the Northwestern Dental School, Dr. A. B. Freeman, of Chicago, demonstrated by a table clinic the use of beads in retaining the rubber dam. The method is to fasten a bead to the centre of the ligature by passing the ligature through the bead and securing the latter by means of a knot. Then the ligature is passed between two teeth, the bead drawn close to the tooth, and the ligature tied. Then the rubber dam is applied over the bead.—*Dental Review*.

[It seems to the writer that it would be easier and better to apply the ligature and bead after putting on the rubber dam.

I have often used a bit of cotton tied in the centre of the ligature and found it to answer every purpose. This is especially applicable when the rubber dam extends to the bicuspid and saves the use of a clamp. Sandarach varnish applied to the rubber dam about the necks of the teeth will often prevent its slipping off as well as prevent leaking.—McCLAIN.]

RESULTS OBTAINED BY ANTITYPHOID INOCULATION.—Professor A. E. Wright, of the Army Medical School at Netley, has published the results obtained by antityphoid inoculation. It is demonstrated, so it is said, that fewer cases and fewer deaths occurred among those inoculated than among those untreated.—*Scientific American*.

GOLD INLAYS.—Dr. L. L. Davis, of Chicago, uses the following method for making a gold inlay: An impression of the cavity is taken in cement. A counter-die of cement of another color is made, using Mennen's borated talcum powder to separate the two. A matrix of pure gold is then swaged and filled by melting into it twenty-two-carat gold scraps. It is then trimmed and set in cement. This sort of inlay was recommended of especial value in buccal cavities in molars and bicuspid where the cavity extends below the free margin of the gum.

Dr. George Evans's method is to use rolled platinized gold to form a matrix for gold inlays in cavities in the front teeth, which are considered too soft to permit of the insertion of gold-foil fillings properly.

His method is, after procuring a good matrix, to build on the surface small particles of gold plate, and fuse together with solder until the contour is nearly reached, then to contour a tip, say to an incisor, with crystal gold and flow solder into that. Very beautiful contours were worked up in that way, and the results show highly satisfactory for that character of work.—*Dental Review*.

TO REMOVE VULCANITE FROM BETWEEN TEETH.—Mount a stiff fine needle in a small handle or broach-holder; sharpen on two sides, and you have a useful little tool.—A. E. H. LEISTER, *Items of Interest*.

VULCANITE INLAYS.—For occlusal surfaces inlays of gray or white vulcanizable rubber are readily made at but little cost, the appearance of the finished work being excellent. The cavity is prepared without undercuts, swabbed with vaseline, and an impres-

sion taken with mouldable wax. White or gray rubber is packed into the plaster mould and the case vulcanized. Finish up well, polish, and cement to place. Gold- or platinum-foil may be used as a matrix, thus assuring a perfect fit.—*Dental Digest*.

Current News.

BOARD OF DENTAL EXAMINERS OF PENNSYLVANIA.

THE Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, December 16 to 19, 1902. For application papers or further information, address Hon. James W. Latta, secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP,
Secretary.

COLORADO STATE BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of the State of Colorado will meet in Denver, Col., Tuesday, December 2, 1902, at nine A.M., for examination of applicants for license to practise dentistry in Colorado.

In addition to written and oral examination, applicants must supply their own patients, instruments, and materials, and come prepared to do practical work under the supervision of the board, which will pass upon suitable selection of cavities.

All applications must be completed prior to December 2.

For application blanks and information, address

H. F. HOFFMAN,
Secretary.

611 CALIFORNIA BUILDING, DENVER, COL.

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Original Communications.¹

OBSERVATIONS ON SOME RECENT CASES OF ORTHODONTIA.²

BY E. A. BOGUE, M.D., NEW YORK.

THE two cases that I have been observing are brother and sister, eight and nine years old respectively, and the observations have continued for a little more than two years. Both these children presented the curious anomaly of irregular deciduous teeth, though the teeth of both parents were, until extractions were practised, remarkably regular. This irregularity of the temporary teeth meant, of course, contracted arches. In the case of the boy the contraction was so great that the lips fell in like those of an edentulous person, giving him the appearance of a very old man. I greatly regret that I did not have a photographic profile made at the time, but his mother was so confident she had one that I did not urge the matter, and it is now too late to secure this almost unique specimen.

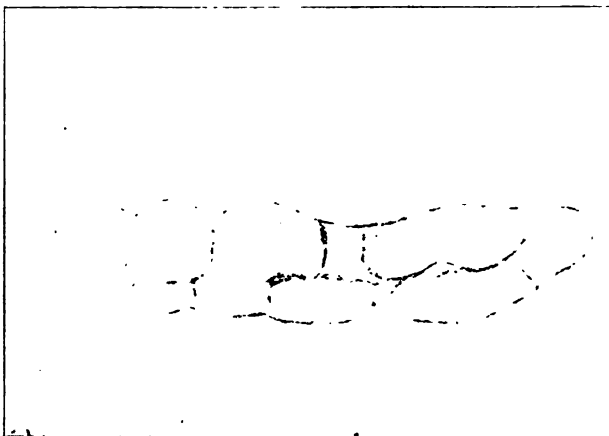
¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June 10, 1902.

The problem in both cases was to procure an enlargement of both arches in the easiest and most painless way possible, and with the least detriment to the teeth and disturbance to the children, and then to retain these teeth in their new positions, holding them out of one another's way during the continued shedding of the temporary teeth and the eruption of the permanent ones.

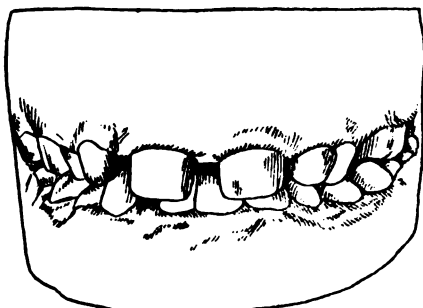
As children of that age are constantly active, fingers, tongue, and lips included, I determined upon fixed, that is to say, non-removable, apparatus, and the first was put on April 19, 1900, when the boy was just eight years old and the girl about nine.

FIG. 1.



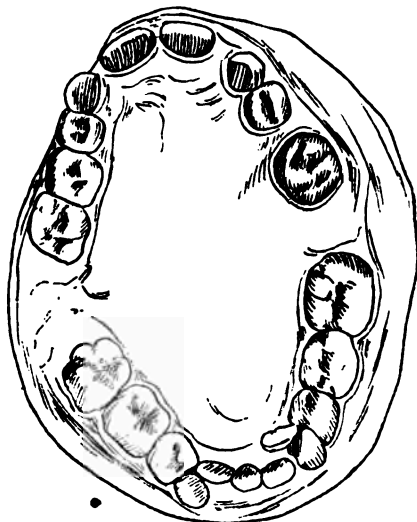
The fixtures consisted of gold tubes soldered to rings, which were cemented on to the molar teeth, a wire screw bow carrying nuts at each end, the bows passing around in front of the incisors, to which they were attached by loops soldered to rings fitted over and cemented to the incisors, the ends of the bows being passed into the tubes on the molars. The position of the nuts on the ends of the bows was in front of the tubes. It will be perceived, therefore, that ligatures of any kind could be attached to any or all of the intervening teeth between the molars and the central incisors, which were the points of permanent attachment. The reason for putting two nuts on each end of these wire bows is that one nut may serve as a jam-nut to keep the other from turning backward after the pressure arising from its work has been relieved by the movement

FIG. 1 A.



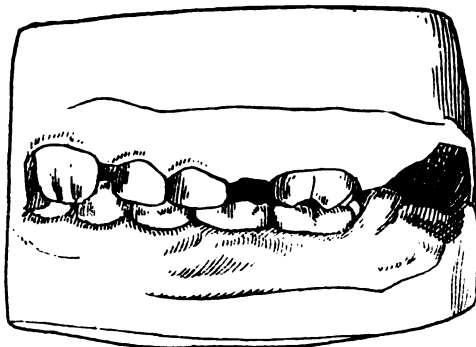
John M., eight years old. Mouth as it was July, 1899, closed.

FIG. 1 B.



John M., eight years old. Mouth as it was July, 1899, open.

FIG. 1 C.

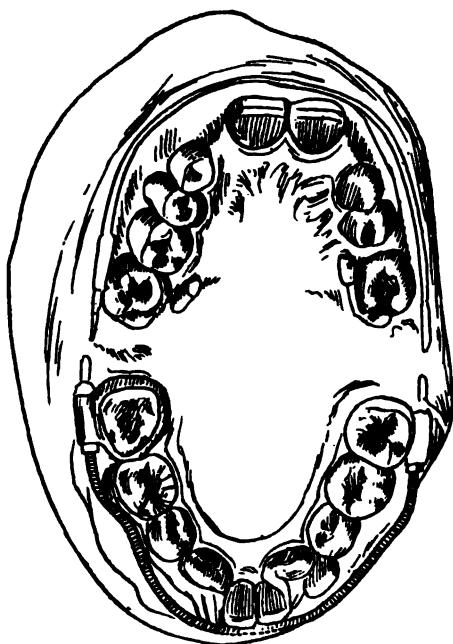


John M., July, 1899. Shows teeth closed and the upper molar far in advance of its proper position.

desired. In the case of the boy the upper incisors were so far within the arch as to make the child seem, as before stated, edentulous. Expansion was therefore begun on the upper jaw by turning the nuts on the wire bow a day or two after the rings had been cemented into place, the bow inserted into the tubes, and the patient had become accustomed to the apparatus being in place. About two weeks later a similar fixture was adapted to the lower teeth, this bow being attached to the two lateral incisors, this time by means of grass-line ligatures. Pressure was applied in both cases by turning the nuts, and in forty days such progress was made as rendered it quite safe for the boy to go away. He sailed for Europe June 6, 1900, with the regulating fixtures in place. One or two of the rings attached to the incisors came off and had to be recemented during his absence, but this was easily accomplished, and he returned from Europe and was presented for observation November 16, 1900. He had been absent five months and ten days, with very slight attention to the fixtures during that time.

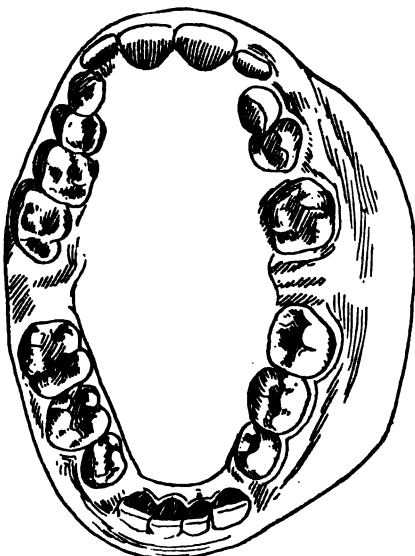
In December, 1900, a gold wire retaining fixture was inserted to keep the lower incisors forward, where they had been drawn, on the principle that if the lower incisors were retained in position the upper ones could not fall back. Nothing was put upon the upper teeth. This wire retainer was broken and repaired from time to time, but was kept in place until January, 1902, thirteen months. Within a month from this date, as the bicuspid had begun to appear, rings and bars similar to those put on twenty months before were arranged to complete the expansion of the two arches above and below, and on February 6 and 10, the bars having been placed, the teeth were tied to them and traction was begun. On February 13 a gold screw was placed in the grinding end of the second left upper bicuspid, which tooth was partly erupted, three-quarters of its width inside the arch, as was also the right second bicuspid. This screw was wired to the bar. On March 10, one month from the time the fixtures were reapplied, it was discovered that the upper left permanent molar did not occlude properly with the lower, but that owing to an early loss of the second temporary molar it had come forward the full width of one cusp. As this occlusion would inevitably produce irregularity in the occlusion of all the teeth forward of that point on that side of the jaw, an upper rubber plate was inserted on March 17, 1902, which carried a screw resting in a long socket with a nut (afterwards changed to two nuts) on the

FIG. 2.



John M. Upper fixtures, placed April 19, 1900. Lower fixtures, about May 3. These fixtures were worn in a trip to Europe, June 6, 1900, and remained in place until his return, November 16, 1900.

FIG. 3.



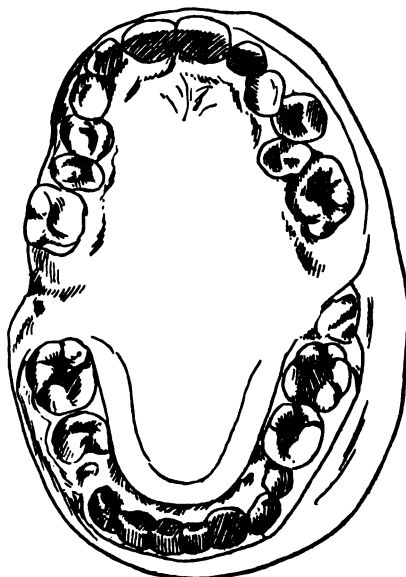
John M. Appearance of the teeth November 16, 1900, after his return from an absence of five months and ten days.

FIG. 4.



John M., December, 1901. Wire retainer modified to throw outward the erupting cusps as the first temporary molars have fallen away.

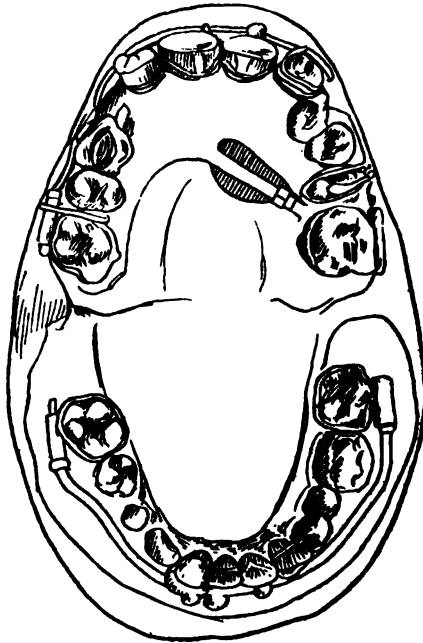
FIG. 5.



John M., January, 1902. Shows condition of teeth after one year of wearing the lower wire retainer only.

screw, a claw on the end of the screw which rested against the upper molar above the line of the ring that was cemented to that molar. This claw prevented the screw from turning in the socket, and the turning of the nuts on the screw exerted a pressure backward against this permanent molar, which pressure was sustained by the entire roof of the mouth, contact against the incisor teeth beneath their rings, and the hold that the plate got under the ring attached to the right upper molar.

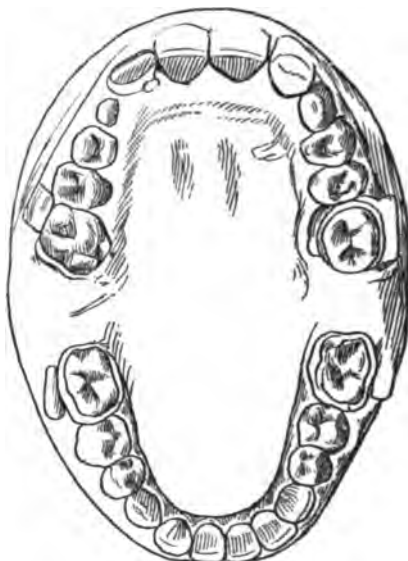
FIG. 6.



John M., March, 1902. Shows progress made in pushing backward the first left upper molar in about forty days, and exhibits fairly well the fixtures employed when he fell ill with measles and was not seen for one month.

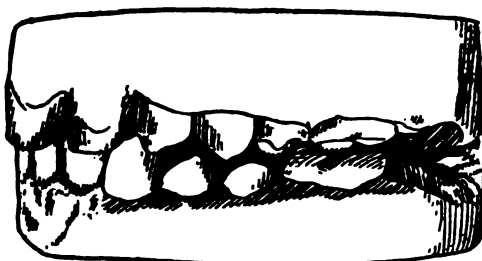
Now began the most difficult part of this regulating for the boy. The force of eruption forward was so great that to obtain the slight movement backward that should allow the cusps of the left upper and lower molars to come into their proper places it was necessary to exert an opposing force that perceptibly changed (at least temporarily) the shape of the roof of the mouth. This pressure moved the rubber plate forward so that the scalloped points that penetrated between the teeth on that side of the mouth were moved to

FIG. 7 A.



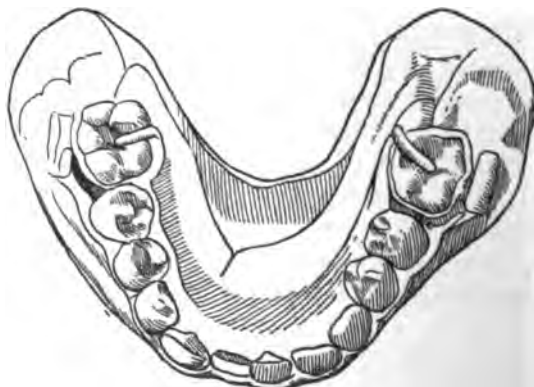
John M., May 16, 1902. After recovery from measles. Shows conditions twenty-six days later, with left superior molar pushed back about three-thirty-seconds of an inch and the adjoining bicuspid drawn nearly to their proper position.

FIG. 7 B.



John M., May 16, 1902. Shows side view of teeth with mouth closed.

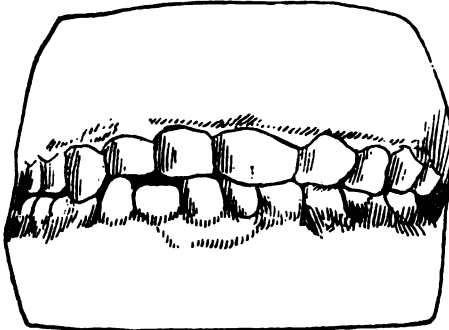
FIG. 7 C.



John M., May 16, 1902. Shows lower retainer in place the day boy sailed for Europe the second time.

the centres of the teeth, and the four incisors were driven forward nearly one-eighth of an inch.

FIG. A.



Louise M., four and one-half years old. Temporary teeth all in place; mouth closed.

On March 28 the second upper bicuspid, whose movements were commenced February 13, were found to be in place,—that is, suffi-

FIG. B.

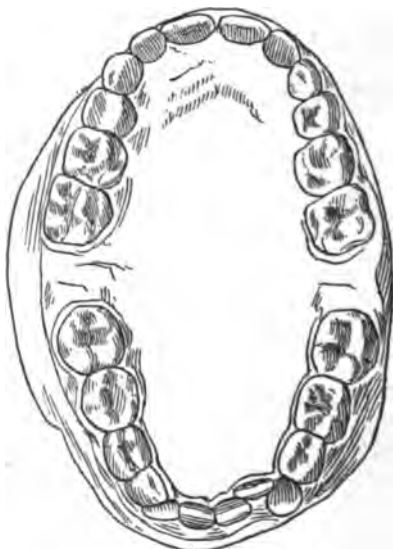


Louise M. Same mouth and same date. Mouth open.

ciently drawn outward towards the bar not to require further movement. They were actually a little too far out. At this time measles

attacked the children, and one month passed before I saw the patients again. During the eleven days that I had been trying to move the left upper molar backward, using only one nut, little progress was made, but on April 28 and 30 I resumed work by placing the two nuts in position and renewed operations upon the molar. In fourteen days the conditions were such as are evidenced by the models. The upper and lower left molars cusped with considerable accuracy, and I made my preparations to let the boy carry this regulating plate in his mouth again across the ocean. Previous

FIG. C.



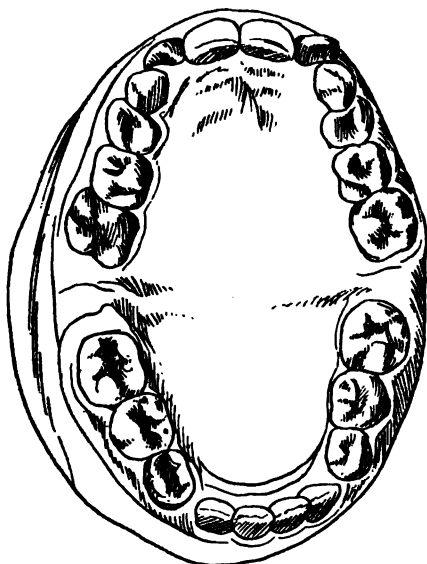
Louise M., July, 1897. Same mouth, showing the first permanent molars and the incisors partly erupted.

to his sailing I constructed two upper rubber suction plates, designed to hold the upper molar where it is, to guide the bicuspid as they shall continue to erupt, inclining them a little outward of the lines of the normal arch, and for the time being to prevent the incisors from falling back, although they are now too far out. I have made a lower retaining apparatus that will scarcely more than touch the lower teeth at the gum margin, but that snaps in after the daily cleaning, and that will absolutely prevent the dropping back into a smaller arch of any of the teeth that have been drawn forward or outward. As soon, therefore, as the bicuspid shall have

developed sufficiently for their long cusps to interlock the upper with the lower, the upper retaining plates may be discarded, for this cusping will surely hold the upper teeth in position so long as the lower teeth are firmly held. Having plenty of room, inasmuch as none of these teeth are in contact with each other, the development of the bicuspid was remarkably rapid. The models show how rapid.

The same plan was adopted for the little girl as for her brother,

FIG. D.



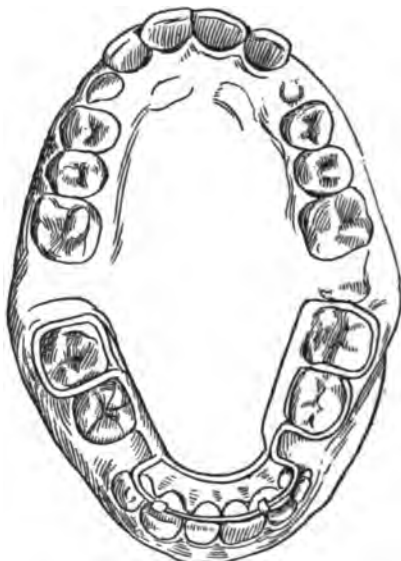
Louise M., December, 1900. Shows lower incisors drawn forward considerably and a beginning made on the upper incisors.

and the enlargement of both arches was accomplished without any complaint of pain on the part of either child.

After the regulating fixtures had remained without disturbance some weeks after they had accomplished their work a wire retaining plate was adapted to the lower teeth so as to snap into place. This retainer holds the incisors securely forward and in proper relation with the molars. It gives ample room for the development of the lower bicuspid and cuspid, and the upper teeth developing a little later will also have ample room to come to their respective places,

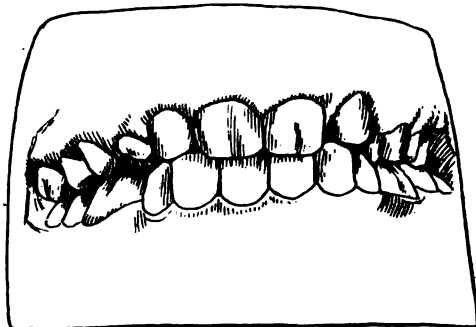
because the upper incisors are held forward by shutting over the lower incisors, which are held firmly in position by the retainer.

FIG. E.



Louise M., May 20, 1902. Shows the mouth open, with the incisors both above and below advanced to their proper places and the lower retainer in position. No retainer above.

FIG. F.



Louise M., May 20, 1902. Same mouth, with lower retaining fixture in place, but not upper; teeth closed, showing how the cusping retains the teeth in position.

I wish to emphasize the following facts:

First, that a perfectly arranged lower arch in ordinary cases guides the teeth of the upper arch into their proper positions and

holds them there without additional appliances, and even in a case where the temporary teeth are irregular operations to correct deformity may be begun almost as soon as the first permanent molars and incisors make their appearance.

Second, that these operations may be almost or quite painless.

Third, that they may be accomplished with great rapidity and with such certainty that absence through unexpected sickness or protracted journeyings scarcely interrupts the orderly progress of the work.

Fourth, that this work may be accomplished with no perceptible detriment to the teeth.

Fifth, that the regulating fixtures themselves may be retained as retainers weeks or months after they have finished their corrective work.

Sixth, that retaining plates may be inserted that retain the lower teeth in position so surely that, as a rule, no retainer is needed above, if we have paid strict attention to the proper occlusion of the teeth.

Seventh, that these retaining fixtures may touch the teeth so slightly, as illustrated by Dr. Baker of Boston, that even if they are worn continuously without removal, the teeth can be as thoroughly cleansed around them as though the retaining fixtures were not in place.

ORAL HYGIENE.¹

BY GEORGE F. EAMES, M.D., D.D.S., BOSTON, MASS.

To secure a healthy condition of the human mouth and maintain it in that condition involves much, not only in the variety of methods by which this may be accomplished, but in its beneficent results, not alone to the oral cavity itself, but to the entire organism.

These considerations may be classed under two heads,—viz., *methods* and *results*. Let us first consider "results;" that is, to put it in the form of a question, What results are desirable in order to secure the one grand achievement, a healthy mouth, the accomplishment of which underlies the whole practice of dentistry?

¹ Read before the Section on Stomatology, American Medical Association, Saratoga Springs, June 10, 1902.

As one of the first results, we may seek to obtain clean teeth, and by that we mean teeth that *are* clean,—clean not alone for the sake of their appearance, but with the object of improving their structure, of preventing decay, of invigorating adjacent tissues, and of securing the beneficial results which will come to other organs and to the entire system.

The idea has prevailed too generally that the mouth-cleansing done by the patient, that is, the cleansing of the exposed surfaces of the teeth and other accessible portions of the mouth, has no influence over the inaccessible places between the teeth. This the writer believes to be erroneous to a considerable extent, for the reason that, surrounding organs and tissues being in a state of health, contiguous parts must partake in some slight degree of the vitality and resistance which obtains in the healthy tissue. On the other hand, if those parts accessible to the patient are in a state of disease due to neglect, it follows that in some of the five ways in which disease is transmitted from one part of the body to another it will travel to those parts which can be reached only by the dentist, thus accelerating decay there, much to his discomfort.

The healthy mouth will not emit a foul odor. By this is not meant the temporary odoriferous breath which is occasioned by partaking of the “festive” onion, or other articles of food or drink.

What is known as a “bad breath” is caused by a putrefactive process going on somewhere. Our object should be to locate this and remove the condition if possible. Decay of the teeth, alveolar necrosis, destructive inflammation of the gums, malocclusion, and loss of teeth are at once conspicuously apparent to the eye and need no comment, but those horribly offensive masses that are often lodged in the crypts of the tonsils are frequently overlooked. And still more remote and difficult to observe are nasal polypi, ozæna, the foul secretions and lodgements which present in the pharyngeal tonsil, and other chronic inflammatory conditions of the nasal and post-nasal space. All these affect injuriously the oral cavity, by the mingling of secretions, by the transmission of bacteria, by the extension of the inflammatory process by means of continuity of tissue, and, more remotely, by the depreciation of the general health which must ensue.

The mouth is a swift and sure indicator of many general diseases, and especially of gastric derangements, which are manifested not only by the oral sensations of the patient and the appearance

of the tongue, but by the condition of the saliva. The ropy and offensive condition of the saliva has often been noticed by the writer in connection with diabetes and gouty and rheumatic conditions, and he much appreciates the statement of Michaels that the saliva varies greatly in the facility with which putrefaction takes place in different specimens. Indeed, for the great advance in our knowledge of the saliva, of the way in which it is influenced by abnormal conditions, and of the use which may be made of it in the diagnosis of diseases very great praise is due to Dr. Michaels, of Paris.

It is also a cause for much satisfaction that the furtherance of this important work is in such able hands as those of Professor Edward C. Kirk, of Philadelphia.

That the oral secretions may become so vitiated as to constitute an important factor in producing decay of the teeth and disease of the structures which support and surround them will go undisputed, as will also the proposition that these secretions may be controlled to a great extent by systemic and local treatment, thus mitigating the evils just mentioned.

The tongue is often covered with infectious material, and when deeply fissured forms a surface not easily kept clean.

There are also many general diseases which contribute either wholly or in part to the above-named pathological conditions, or oral disease may be responsible for the general condition.

William B. Keyes, of London, has contributed valuable information on this subject. He enumerates several cases in which injurious effects were produced locally upon the stomach by means of infectious material from the mouth which was constantly being swallowed. He also cites cases illustrating the systemic effects resulting from the absorption of toxins. It seems appropriate here to call attention to the necessity for the education of the physician dentally and for the education of the dentist medically, and for consultation between the medical specialist in dentistry and the medical specialist in those conditions which have a pathological relation to the oral region.

It is not necessary to enlarge upon this subject before *this* session of the American Medical Association. You are all wise, therefore the word which I have spoken is sufficient. In fact, the writer wishes to avoid making a lengthy paper by repeating much that has been written on oral hygiene, but rather to give as far as possible the newer thoughts, relating especially to treatment.

Let us now consider the "methods" in the treatment of the various conditions which have been named in the foregoing portions of this paper.

The patient on rising should rinse the mouth several times with water, and follow this by brushing the teeth, using brushes, powder, and washes selected by the dentist. The teeth should be brushed for three minutes, or for a length of time suggested by the dentist as a result of his knowledge of the needs in each particular case. The patient should have several brushes, one containing rubber bristles. The cereal powders suggested by Dr. M. H. Fletcher seem to possess qualities which should commend them highly. The teeth should be brushed in all directions, including a rotary motion, with the object always of removing any foreign substances clinging to their surfaces.

The brush should be wet with an antiseptic wash, and plenty of powder should be used. It has been advocated that the brush be used dry, but of what advantage can this be? It will, after a little use in the mouth, become wet in some degree, and to use it in this pasty condition would be neither the wet nor the dry process. The dry brush with powder would, with extra power, remove particles from the exposed surfaces, and would produce a high polish, but parts not receiving this extra force would not be cleansed so well as by the wet process, provided enough powder is used and the bristles of the brush are sufficiently stiff.

The gums also should be brushed, but for this purpose, in the writer's opinion, a brush with rubber bristles is best, using it wet either with antiseptic wash or with vaseline, one ounce; menthol, three grains. If the condition of the mouth require it, the gums may also be rubbed with the tips of the fingers, on which the above preparation of vaseline has been placed. After this, especially at night, the following preparation may be pushed in between the teeth with the balls of the fingers.

R Vaseline, ℥i;
Cera alba, ℥ss;
Hydronaphtol, gr. xv;
Oil of cinnamon, gtt. ii.

Finally the mouth may be rinsed with some antiseptic solution.

Toothpicks may be used after meals, and may consist of wood, quill, or of metal. Gold toothpicks, properly shaped, are the best,

in the writer's opinion. Careful instruction, however, should be given the patient as to the proper use of these agents, pointing out the danger of wounding the gums, of leaving particles of wooden picks between the teeth, and of using too much force with the metal ones.

Besides these the patient may use the stick and pumice, he being properly instructed in such use. This may not be indorsed by all practitioners, but the writer has often averred that the possibilities of what the patients may do for themselves under proper advice and instruction are very far from being reached. One patient in particular, who had been following my advice in this matter, said, on being reminded of a coming appointment, "There will be nothing to do. I'm a regular Fiji Islander," exhibiting the stick which he had been using. We had previously been talking of the custom of the South Sea Islanders, who use their spare time in rubbing their teeth with a stick, and of the benefit with which Americans might follow their example.

The writer has advocated in the past the cleansing of the tongue as a part of the necessary mouth toilet. He wishes now to modify his statements on that subject. He advises that the tongue be cleansed when necessary, by means of a brush with rubber bristles, and never with the stiff hair bristles which have been used for cleansing the teeth.

For diagnostic purposes, it would seem that any coating or deposit on the tongue should be left undisturbed; and when a diagnosis has been made, the scientific method of cleansing the tongue would be to correct the systemic and local conditions which caused the deposit. Meanwhile, if deemed necessary, the local cleansing of the tongue may be carefully done.

The disadvantages of scraping or scrubbing the tongue, so far as the writer has observed, are (1) the danger of getting bristles into it and causing inflammation and distress, and (2) the liability of infecting the tongue by the penetration of bristles loaded with bacteria in proportion as this organ needs cleansing. Small fissures or denuded surfaces are especially liable to become infected.

The tongue should be self-cleansing, and while it is not possible, perhaps, under the high state of so called civilization in which we are living, to bring about this desirable condition, yet much may be done in this direction by prescribing foods requiring prolonged mastication and use of the tongue; in fact, by restoring its func-

tion. It is the *use* which is made of an organ which largely determines its hygienic condition.

If one must have liquids with food, let him take it after swallowing the food; he will then be obliged to masticate in order to make it possible to swallow.

The tongue, the mucous membrane of the mouth, and the gums are extremely sensitive to general disturbances, and often show the effects of a remote pathological condition long before any other symptoms are manifest, and, indeed, sometimes these oral expressions of disease are the only ones which may be recognized. The dentist may now step in to do what the patient cannot do, and he has a serious and important task to perform, for upon it depends to a great extent the physical welfare of the patient.

The spraying of the mouth and teeth with antiseptic solutions by means of compressed air, the use of stick and pumice, the application of silver nitrate, the filling of cavities, the removal of deposits, the treatment of the gums, the correction of irregularities, the restoration of lost teeth, and the treatment of the various pathological conditions which may occur in the mouth are all familiar operations, and the writer would only urge that they be well and thoroughly done and leave it to the conscience of the operator.

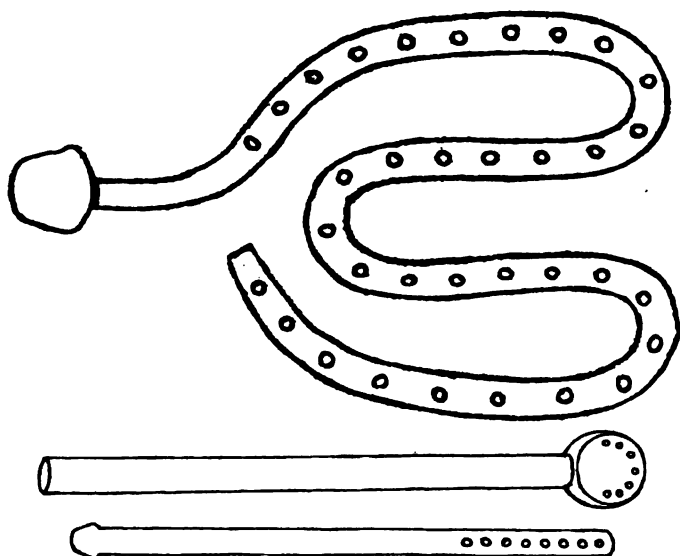
Some of these operations and treatments, the writer thinks, may be improved; for instance, in cleansing and polishing between the teeth he has used instruments of his own design, with thin gold blades of various shapes, so very thin that they may be passed between or nearly between all teeth. These are dipped into some antiseptic solution, then into powdered pumice, and carried between the teeth, back and forth, first from the labial or buccal side, and then from the lingual, until the approximal surfaces are clean and smooth. These instruments can be carried where no stick can be used, and in the writer's practice this is a distinct advance over his former methods of treating these surfaces.

When the breath is impure, and the cause is not to be found in the teeth and surrounding parts, the tonsils should be inspected, and if pockets exist in the faucial tonsils they should be cauterized and the organ reduced in size if necessary. If adenoids are present the cause may exist there, and if so the redundancy of this tissue should be removed. The nose should also be examined, and polypi and catarrhal conditions should be treated. The cause of an impure breath may be very remote, and thorough examination of all the

visceral organs should be made until the original cause is found. In these cases it is imperative that there should be a co-operation between the physician and the dentist.

In the treatment of inflamed conditions of the gum as well as for cleansing purposes the writer has devised douches of various forms which conduct water at a temperature of 110° F. to the mouth. (Fig. 1.) This is kept up for ten minutes, the patient

FIG. 1.



holding the head over a fountain cuspidor or bowl while the water runs out of the mouth. This idea was suggested to the writer while he was taking a shower-bath after a hot tennis match at Longwood. The water comes from the hand-hose with great force, and the stream was directed into the mouth, cleansing it most thoroughly and giving a delightful sense of comfort.

For the purpose of injecting a paste into pockets or between the teeth the writer has also devised an ointment syringe, the piston of which is driven by means of a screw. (Fig. 2.)

And now a word in relation to all that has been written regarding oral hygiene in the public schools. The dental examination of pupils is of undoubted value, but they seem to be regarded merely as material to be turned over to the dentist by the board of overseers.

However destitute parents may be, they have the rights of individuals, as citizens, as fathers and mothers, which should be respected, and their consent, not the pupil's, should be asked before a dentist, not of their choosing, shall insert instruments or fingers

FIG. 2. .



into their children's mouths in the course of the examination of a hundred others. The father of small means has the right to ask that the same or equivalent antiseptic precautions be used for his children as for rich private patients, and his ignorance of these matters should be no reason for depriving him of the privileges belonging to any citizen.

Although many of the before-mentioned subjects have been treated briefly and perhaps inadequately, your essayist now comes to a stop, because "a wise man is like a spring lock, always more ready to shut than to open."

NOTES ON METHODS OF PREVENTING DECAY.¹

BY J. MORGAN HOWE, M.D.S., M.D.

THE means suggested for preventing decay that has recently received most attention is that which has been designated by the phrase, "Extension for prevention." I understand the practice, as described and taught, to be a procedure, in the preparation of cavities, that removes sound enamel and dentine in enlarging their area, so that gold or filling-material may be substituted for such dental tissues. It does not refer to the cutting away of partly disintegrated or undermined enamel and dentine that more or less surrounds all cavities. This is removed without reference to the question of "prevention" in adjacent tissues that are still sound.

Dr. Black says, in describing the tendency of certain areas of teeth surfaces to decay,² "The principle is established of so extend-

¹ Read before The New York Institute of Stomatology, June 3, 1902.

² The Technical Procedures in filling Teeth, 1899.

ing the cavity outline as to include the area of the surface which . . . is especially liable to decay in the future. This is called extension for prevention. It applies to all smooth surface cavities." These brief sentences seem to contain the gist of the practice about which so much has been written, and I wish to add only a little to the discussion, to indicate wherein I think such sacrifice of tissue as yet sound is unjustifiable and illogical. If I repeat what others have already said, I can only hope it will bear repetition.

In regard to any cavity, the area of decayed tissue is in each case more vulnerable than that remaining sound; otherwise it would not be decayed; and when all the dentine and enamel that are affected by the disintegrating process have been removed, neighboring enamel may reasonably be expected to continue sound if the conditions remain the same. It is not necessary to assume that such contiguous surfaces will decay, especially as it will probably be within the patient's power, by greater attention to cleanliness, to make the conditions more favorable than they have been.

The advocates of "extension for prevention" propose to bring about cleanliness of enamel by substituting gold for enamel in those locations less accessible to means of friction, and by leaving enamel only in so-called "self-cleansing" or easily brushed areas. But if the claim is granted that the enamel remaining sound adjacent to a cavity has proved itself less liable to decay than that already destroyed, with the conditions remaining the same, the sacrifice of such sound tissue because it may decay certainly seems unjustifiable.

The principal factor in decay is the susceptibility of the individual. Dr. Black, in reference to this fact, says,¹ "At the present time we are unable to control in any direct way this principal factor, susceptibility; in prophylactic treatment our attention must be directed to the removal, modification, or improvement of those conditions, giving opportunity for its manifestations." To this I think we will assent, but treatment which does not affect the principal factor in the process should be far less destructive of the tissue it is desired to save than is the one under consideration. All the sacrifice of sound enamel and dentine is made to put an imperishable material in its place, where there is some difficulty in keeping the surface clean. But many such surfaces do not decay. 'So far as

¹ *Operative Dentistry, Pathology, and Bacteriology*, 1901, p. 270.

I know no suggestions have been made for discriminating in the selection of teeth on which to practise "extension." "It applies to all smooth surface cavities."

When applied, then, to teeth decayed on the proximal surface, and also on the labial or buccal faces, there would be little of the tooth remaining. The æsthetic sense of the present time regards the conspicuous showing of gold in teeth as highly objectionable. "Extension for prevention" and porcelain inlays seem to belong to different periods. The practice of "extension" on proximal surfaces, as taught, does not remove the enamel always most liable to decay. In my own observation of incisor and cuspid teeth it has very frequently happened that decay has occurred at the incisive margin of proximal fillings, when the gingival enamel has remained sound, although considerable of it has been exposed between the filling and the gum. This fact has been the subject of repeated observations during the two years last past, while "extension" has been so much discussed.

I am convinced, too, that in the treatment of the bicuspid and molars, and on all surfaces, accurate mapping out of the portion of the tooth most liable to decay in the future cannot be done so as to justify "extension" in the sense of its present advocates. We are indebted, however, to Dr. Black and his followers, for the agitation of the subject directs our attention, among other things, to the need of extending the margins of cavities in proximal surfaces to make the margins free of contact with the adjacent teeth, when proper contour of filling has been made. I have been observing more carefully, as no doubt you all have done, during the years that "extension" has been under discussion, and I am sure I have seen many proximal surfaces decay next to otherwise good fillings, for lack of such extension and contour. On the other hand, I have been convinced by the endurance of enamel between the gingival margin of fillings and the gum line, when decay had taken place elsewhere, that the sacrifice of the sound tissue referred to, as advocated by the apostles of "extension," to carry the margin of the filling under the gum, would have been an unnecessary and damaging proceeding. The experience and observation of one practitioner does not go far, but all who remember the history of practice will be conservative, I am sure, about adopting methods that involve destruction of tissue.

More than thirty years ago Dr. Robert Arthur devised a system

of "Treatment and Prevention of Decay of the Teeth," and these words were the title of a book he published to explain and advocate his method. This consisted essentially in cutting the teeth away from each other, shaping them so as to leave points of contact only at the buccal or labial side near the gum.

He assumed that the enamel and dentine near the gum, left in a projecting point, would remain sound. The proximal surfaces of incisors were sliced off so as to make a V, opening lingually. I have seen incisor teeth so treated with success, and without disfigurement. But Dr. Arthur's system was to be applied to all teeth, bicuspid and molars as well as incisors. He convinced many of our best practitioners of the validity of his method, and dreadful was the havoc and mutilation they effected with chisel and disk. The spaces made between the masticating teeth were a source of great discomfort to the victims, decay was not prevented, and dentists who began the practice with enthusiasm abandoned it after a while, as completely as they dropped copper amalgam after the fervor of early acceptance passed off. There must have come to the minds of many, after the experience with Arthur's method, an appreciation of the impropriety and folly of ruthlessly cutting away so large a proportion of sound tissue, whose salvation they really desired. I was fortunately restrained from falling into the fashion of that time to any great extent by the experience of having the "treatment" with a disk—run by the newly introduced dental engine—applied to some of my own molars. The discomforts I endured in masticating afterwards gave me pause. But there is, after all, some merit in the Arthur method when applied to the incisors—and possibly to the cuspids—with skill and discrimination. I think, although I have not resorted to it in many years, it would be less destructive and more promising of good results than "extension" as taught now.

Arthur's object in slicing off so much of the teeth was to facilitate keeping the surfaces clean and polished. But in addition he wrote that thin tape should be passed several times a day briskly over the surfaces "so as absolutely to guard against the retention upon them of any extraneous substances." "No operator," he said, "will hold himself in any way responsible for an unfavorable result in the cases of persons who are so careless as not to give proper attention to the cleanliness of their teeth." He appears not to have thought of the good chance there would have been for normal and

unmutilated teeth that received such care as he prescribed. The revival of interest in polishing the surfaces of the teeth is a fortunate pointer, bringing us back to methods in use before Arthur devised his method of facilitating cleanliness by making artificial spaces.

We are hardly justified in hoping for a speedy solution of the problem of how to control the main factor, susceptibility; yet we may expect it will be possible in the future to produce such changes in the oral fluids as to overcome or modify the predisposition to decay. In the mean time all are agreed that cleanliness of the surfaces of the teeth continues to be our main reliance in efforts to prevent its inception. The question is, Shall we seek to bring about cleanliness by such operative procedures as Dr. Arthur advocated, or as Dr. Black and his followers are now teaching?

We can readily understand, I think, since Dr. Williams has shown how decay begins under the adhering *mucous plaque*, why antiseptic lotions have had so little effect in preventing decay, and can see the need of constantly rubbing off such films from enamel surfaces. We have, however, little on which to congratulate ourselves as a specialty if progress in prophylaxis must be marked by resort to methods involving great destruction of tissue. The history of practice, too, within the memory of many of us may teach us caution in adopting, without due consideration and trial, ideas or methods having authority behind them. We readily recall how much ill-considered work was done in the indiscriminate extraction of teeth merely to make room for those remaining, in the capping of pulps with oxychloride of zinc, in the adoption of copper amalgam, and in the purchase and use of electric batteries for cataphoresis. All these things became fads. They had enough reasonableness to support an argument in their favor, but there was too ready an acceptance because of the authority recommending them. A lesson appropriate to the present time seems to be that every practitioner should use the known facts in regard to the beginning of decay to help him to do a good deal of thinking on his own account concerning prevention, and to hold him back from being too easily led by others.

DENTAL NOTES.

BY WILLIAM ROLLINS.

NOTE VI. ON A FORM OF OXYPHOSPHATE FILLING.

THESE notes have been interrupted by more important matters. This one is written at the request of Dr. Louis Jack.

The ordinary oxyphosphate of zinc filling is so temporary that any change in its composition which will make it more durable is important. I have found a number of cements which have more lasting properties. One of these has now been tested for nearly twenty-five years. To make it, add oxide of iron in the form of the finest rouge to the oxide of zinc in the proportion of one part of the former to six to ten of the latter. The color is dark red, but this is no objection to its use in many places. The mixture may be quickly produced by shaking the two powders together in a test-tube.

IMPORTANCE OF DETAILS.¹

BY DR. W. M. WHITLOCK.

PROBABLY there is nothing relating to our profession to which so much emphasis has been given as the importance of details. Every dental operation must be performed with this thought always in mind, and every dental operation is successful exactly in proportion to the amount of care given each step. We cannot say that this carefulness of detail is more important in one class of operations than another, but nowhere does hasty, incomplete, careless work make itself so painfully felt as in operations in the roots of teeth. Every crown needs a good root, and the best root is a live one in which the pulp is healthy and normal, but if the pulp has become inflamed, perhaps only irritated, comfort may demand its extirpation. The pulp may be dead and not removed, and hence a source of danger. But if, from whatever cause, it becomes necessary to open a tooth, treat and fill the canals, let that operation be

¹ Read at a meeting of The New York Institute of Stomatology, June 3, 1902.

done, step by step, with the minutest care, lest the last state of that tooth be no better, if not worse, than the first. With this thought before us, let me select one step in that operation—"the opening of root canals"—for a few words regarding my methods of procedure. Having made our diagnosis and having decided that the pulp must be lost or that the tooth is dead, we should allow nothing to hinder or prevent our entering and cleansing every canal, and if, in so doing, it becomes necessary to sacrifice tooth-structure, we should unhesitatingly do so, for certainly the crown of the tooth is of no value without the roots, yet we must be careful lest we so weaken the tooth as to increase the danger of its splitting through both crown and root. While deprecating the unnecessary cutting away of tooth-structure, with a perfect knowledge of the location of the canals of normal teeth and a knowledge of their probable location from the outline and conformity of the visible portion of the tooth, the canals can all be entered with a minimum amount of cutting. An excellent way of attaining this knowledge is by a study of teeth out of the mouth, by noticing their shape and the general relation of the roots to the crown.

It is not my intention to give a detailed account of my method of opening each individual tooth, but it might not be amiss to mention a few points that have been of inestimable value to me. In speaking of difficulties encountered in opening teeth, it is the multi-rooted teeth, the molars and bicuspid, that are generally to be considered. Of course, the reason for this is obvious, as the liability of small, abnormal, tortuous canals is much greater in these teeth.

In opening molar teeth it is my practice always to ignore a posterior or buccal cavity. If the tooth presents a compound anterior cavity, this can be utilized, otherwise an opening should be made through the anterior sulcus. It is desirable, in bicuspid teeth, to avoid going down through the centre if possible, using an anterior or posterior cavity, lest the tooth be too greatly weakened. In entering, extreme care must be taken not to mar the floor of the pulp-chamber, for its natural conformation is our most valuable guide to the location of the canals. Without enlarging the external opening to any great extent, the inner end can be bevelled to include the whole roof of the chamber. This is best accomplished by a round bur of medium size, either straight or right-angled, as the case requires.

In entering the anterior sulcus of a normal superior molar the

drill enters the pulp-chamber very close to the centre; that is, at a point midway between the three canals; then by hooking the bur under the palatine edge of the roof of the chamber and pulling up, always being careful not to mar the bottom of the chamber, that portion over the palatine canal may be removed so that the canal can very readily be entered with the broach. The same method is used buccally and a little posteriorly for the posterior-buccal canal, while, especially in extreme cases, considerable anterior cutting is required to enter the anterior-buccal canal.

Entering the pulp-chamber from the anterior sulcus of a lower molar finds us, in nearly all cases, directly over the anterior-lingual canal. From this point it is necessary to bevel posteriorly and somewhat laterally to a considerable extent to enable us to enter the posterior canal freely, while the anterior-buccal canal will be found usually to be, if anything, somewhat anterior to the lingual. The possibility of a fourth canal must always be borne in mind in opening these lower molars, there being often, instead of one large posterior canal, a buccal and a lingual canal posteriorly as well as anteriorly.

Here again let me emphasize the great advantage to be gained in not destroying the natural formation of the floor of the chamber, for the canals are at the bottom of a funnel-shaped depression, which is an invaluable guide to locating them, and in cutting these away we add very much to our troubles. It is also a great mistake to try to enter the canals with an engine-bur or a large stiff instrument of any kind, for in doing so the danger of going through the side of the canal, or, at least, of making a shoulder that will prevent free access, is very great. What I have said thus far has reference, principally, to normal teeth. There are some abnormalities with which we are familiar and many more with which we are not at all familiar but which require watchfulness and care in observing and filling what we see and not what we expect to find. There are two that are somewhat common. One that I have found, and a very puzzling one, is pulp-stone, of which I have samples here. They are found in teeth that are otherwise normal and can be broken up in the pulp-chamber or taken out intact. The other abnormality is to be found in the upper second molar, which frequently presents a large palatine and buccal canal, with a very small one between them, which, if we enter at all, will be but a little way.

Not of the least importance are the instruments to be used, and to which I wish to call your special attention.

First, a smooth, round, piano-wire broach, used for locating, examining, and measuring canals. Normal teeth usually measure about three-quarters of an inch in length. It is well to measure each tooth through the large canal, and make a note of any variation from this normal length. Indeed, you may measure each root. It is important to have these smooth broaches marked with a bead of shellac, so that we will know how far we are going.

Second, a four-sided, square, piano-wire broach, for reaming and enlarging the canal. These broaches are very tough, and with moderate care will not break. They will even twist into a spiral form first, when, of course, it is better to discard them. They are all pliable, conforming readily to an ordinarily crooked canal. By letting the instrument pass up until it binds, and then freeing it a little and turning it back and forth between the fingers, the fine canals can in a very short time be enlarged sufficiently to be readily cleansed and filled.

Third, a small, three-sided finger-reamer, such as suggested by Dr. Howe, for enlarging the entrance to each canal to aid in dressing and filling.

A Donaldson canal-cleanser is a very valuable instrument, not only for removing a pulp intact, but, in conjunction with pyrozone, for removing the disorganized remains of the pulp in a tooth already dead, and for scraping the sides of such a canal. I have found sizes No. 5 and medium to be the most serviceable.

In many dead teeth that have been long neglected the carious process has extended to the canals. This leathery decay can best be removed by means of a smooth wire broach, such a one as has already been described, the end flattened and turned at nearly right angles and sharpened as a hoe. Cleansing the canals of such teeth is not difficult, as they have already been enlarged by decay.

During all this instrumentation the broaches and cleansers are constantly bathed in some antiseptic solution (five per cent. formalin preferably), and with a few fibres of cotton wrapped on a fine broach the canals being operated on are swabbed with the same solution.

The canals having been thoroughly opened and cleansed in this manner, it remains to treat them preparatory to dressing. This is done by first thoroughly washing them with three per cent. hydro-

gen dioxide and drying them with alcohol and hot air, when they are ready to receive the dressing. The smaller sizes of Swiss broaches, commonly known as jewellers' broaches, are ideal for dressing canals. The temper of these broaches is drawn and the ends squared by passing them through the pores of a short piece of hickory and sharpening on the oil-stone. A few fibres of unwaxed floss twisted on such a broach can be carried into a canal with the greatest facility. The square end catches the fibres of the silk and carries the dressing into the canal, while the polished surfaces of the broach permit of its being withdrawn, leaving the silk in position. In this manner a long fibre can be closely packed into a canal if desirable.

This is work that requires a high degree of skill, a delicacy of touch, and an intimate knowledge of the anatomy of the tooth, but, more than this, it requires infinite patience; indeed, patience is the first requirement, for without it it is quite impossible to attain unto either the skill or the knowledge. Our time should never be too valuable to give our best.

THE COMING PHYSIOLOGY: A PREDICTION.¹

BY DR. S. B. PALMER, SYRACUSE, N. Y.

FIRST CHAPTER.

GENTLEMEN,—By the kind words spoken here to-night I am assured that my life has been spared to live down the so-called heresies of the New Departure, for which I am very thankful. Life is too short to engage in another departure; and yet by the eye of faith I can read the preface of the coming physiology, something like this. Modern physiology teaches that life is energy, emanating from the Creator, which is the soul or spirit of matter. It is manifested in all matter, and may be recognized when matter in evolution has been raised from the elements into conditions to maintain life. Life is visible in vegetation, and in the lower animals, ascending to the highest creation, man. Electricity, as has been taught in

¹ Read at the banquet given in honor of Dr. S. B. Palmer, New York, October, 1902.

physics, has been the agent to unite the elements to form masses, to prepare for vegetable life.

SECOND CHAPTER.

Life appears, as seen in the vegetable kingdom, and in addition, there is instinct manifesting guidance to seek moisture through the rootlets; also life and light through the foliage. This teaches co-operation between the soil and sunlight. The communication is through the sap, which to the tree or vine is as the blood to the animal; not only that, it is an electrical conductor between the positive pole, the foliage, and the roots, which are negative. Cut off the tallest vine at the root, and it withers and dies directly. Thus electricity has undergone evolution, and is adapted to the growth and needs of vegetation. The florist knows that flowers undergo civilization by proper cultivation and fall back by neglect.

THIRD CHAPTER.

The third chapter teaches that the "clay," so to speak, of which man is made, is of a finer quality. Added to instinct, man has mind, will, thought, and reason. In past works on physiology there seems to be no scientific connection between those attributes and the body, nor had science advanced to a degree which could afford demonstration. What has been understood as the "electro-chemical theory" has been taken as the basis of this work,—namely:

Man is considered an organic living dynamo, the system being run by electrical currents, which are mainly generated from positive and negative food elements taken into the stomach. The stomach is a vital cell; the elements are organic, and by the process formerly called "digestion" pass through the process taking place in a fluid cell of zinc, copper, or carbon, in appropriate fluids, in the laboratory. Currents thus generated we call physical electricity. The electricity which is generated in a living cell from organic elements is called vital or organized electricity. Mind, will, etc., are phases of electricity. Life as mentioned is energy back of our knowledge. We see its manifestation in man, which is the most convincing phase of mental electricity of any hitherto set forth. For instance, consider brain and muscle storage batteries for vital electricity, and each organ a station commissioned to do its work under direction of life's agent, electricity. Thus, in dentistry, the deciduous teeth conform to the side of the jaws; later on the roots

are absorbed and the permanent tooth takes its place. This process seems simple when it is considered electrically. Life directs the deposit to build up, and reverses the current to absorb the roots. Each process is conducted in time and in order, as teeth are in pairs, and adapted to their position in the jaws.

FOURTH CHAPTER.

The fourth chapter teaches the relation of mind to matter, which is demonstrated by electricity generated from organized elements. In telegraphing the mind directs the fingers to manipulate the key by which symbols of words are put in circuit to a receiving operator, who translates and delivers the message. This illustrates nothing different from writing letters except the mode of conveyance. The invention of the telephone, aside from the uses to which it was designed, has furnished demonstrations which warrant the introduction of the teachings to be found in this new physiology; that is, mind, thought, will, etc., are phases of intellectual electricity that relate to the body and belong to science for discussion, as truly physiological or mental science has done hitherto. This work teaches that the gulf between physical science and mental science has been bridged over. It does not include metaphysics proper, but science in connection with thought, will, and reason, relating to present life here and now. As an illustration: It is well understood that the voice of a speaker is borne on the air by wave-sounds that are set in motion by the vocal organs. Also that the voice cannot be heard at any great distance. The vocal organs are under mental control and direction through life's energy, conveyed to the organs by vital electricity. The process seems simple by which vital electricity is converted into physical electricity, and again reconverted into speech, even in the voice of the transmitter. The waves of sound strike a disk, which in effect corresponds with a telegraph key, though with inconceivable rapidity. Thus the impressions are carried forward with lightning velocity at the receiving end of the line, by a receiver, and speech is restored. Mental electricity inspired the vocal organs to do life's bidding; by physical electricity the message is carried and delivered in the tone and spirit of the author of the message. Wireless telegraphy teaches not only the same principle, but an advance lesson in inspiration, and man's relation to Divinity. This doctrine does not strictly belong to dentistry, but is predicted as belonging to science of life in life.

Science is truth, and divine. It will, in the Creator's good time, do away with fallible traditions and inspirations. One great hindrance to the world's progress is looking backward for light and guidance instead of forward. Inspiration is open to man now as it has ever been. When individuals can have faith in the Divinity within, and more courage to think for themselves, they will hold to all truths vouchsafed in the past, and as a foundation upon which to stand and receive new light, and new truths, that Divinity offers to all mankind who can reverently trust the conditions upon which they are offered. The trend of investigation indicates that the discovery may soon be announced that electricity is an element which is the connecting medium between mind and matter, or between man and his Maker. Such discovery would solve the mystery which at present shrouds electricity, and it would stimulate man to come into closer communion with his Maker.

THE RETICULUM IN DENTINE.

BY JOHN S. ENGS, D.D.S., OAKLAND, CAL.

ON page 319 of the *INTERNATIONAL DENTAL JOURNAL* for 1895, we find an article by F. A. Roy, entitled "A Reply to a Review of Bödecker's Book." The writer of that article took exceptions to the reviewer's conclusions, and prophesied that some day photographs would be made showing the reticulum of Heitzmann as Heitzmann describes it. One of the objections taken to the evidence presented in the book was, that the illustrations of the reticulum were all from drawings made by Heitzmann himself, and that drawings, however well executed, cannot carry conviction.

Between pages 632 and 633 of the *INTERNATIONAL DENTAL JOURNAL* for 1892 will be found two plates made from drawings by Heitzmann. The article which they accompany ends with these words: "My intention in exhibiting these two specimens is to stop short all further doubts as to the reticular structure of the basis-substance of dentine. In face of the facts presented, I am entitled to expect such a result."

While these illustrations show a net-work of processes from the main tubules, they certainly do not present any such appearance as

is shown in other illustrations of the reticulum made by him, taking, for instance, Fig. 6, on page 700 of the JOURNAL for the same year. This shows a uniform reticulum in the cementum, and is perhaps a better illustration of his claims than are the two plates previously referred to.

If the only objection to the reticulum as described by Heitzmann lay in the fact that enthusiasm and a skilful draughtsman may prompt the eye to see more than really exists, then the evidence furnished by the camera in recording what the microscope reveals should be sufficient to satisfy such objection, but he claims more than I think it possible for any camera to show.

It seems rather unfortunate that much of the work in dental histology has been upon decalcified or semidecalcified specimens. We could hardly expect a staining reagent to act the same upon a substance of glue-like consistence as it would upon the same substance when thoroughly impregnated with calcareous matter. In my work upon dental tissues I have endeavored so far as possible to preserve the natural relation and condition of the parts. This necessitated the use of investment methods such as would hold the tissues in place during the process of grinding or cutting in the microtome. In no case did I decalcify my specimens.

That my results might be uniform upon embryonic as well as upon fully developed and adult teeth, I observed the same technique in staining. This consisted of a combination of Golgi's with a carmine stain.

To obtain sections of embryonic teeth the microtome was used, the specimens being first embedded in paraffin. Owing to the advanced state of calcification the sections were somewhat broken, but in places the enamel attached to the dentine remains unbroken, being merely separated from the dental pulp.

The sections of embryonic teeth show the tubules of the dentine stained black, the silver salt probably giving what is known as a primary stain, or precipitate in the tissue.

If the specimen is overstained, as we find in sections made from surface cuttings, a diffusion of the stain seems to have taken place, resulting in obliteration of detail.

This is often seen near the border of the pulp and in the outer layer of the cementum in formed as well as in forming teeth. If the section is made sufficiently thin, however, the tubules will be

clearly seen, well defined from the matrix, which remains practically unstained. Those processes which pass outward from the dentine into the enamel, cutting diagonally across the enamel-rods, are also stained black. The formed enamel, unlike the basis-substance of the dentine, is stained a deep pink by the carmine.

If the "so-called reticulum," which Dr. Andrews believed to be really the "substructure of connective-tissue fibres," existed as such, to afterwards become calcified, we would naturally look for some trace of it in the early stages of development in the embryo. I do not find it, but I do find, as previously stated, the dentinal tubules with their dichotomous endings and lateral branches, apparently of no greater dimension than in specimens taken from fully developed teeth. The lateral branches in some instances are seen to have a number of fine subdivisions which present a moss-like appearance, but I do not find a uniform net-work throughout the substance of the dentine.

The dentine of deciduous teeth presents the same appearance as that of permanent teeth, as regards the tubules and their branches.

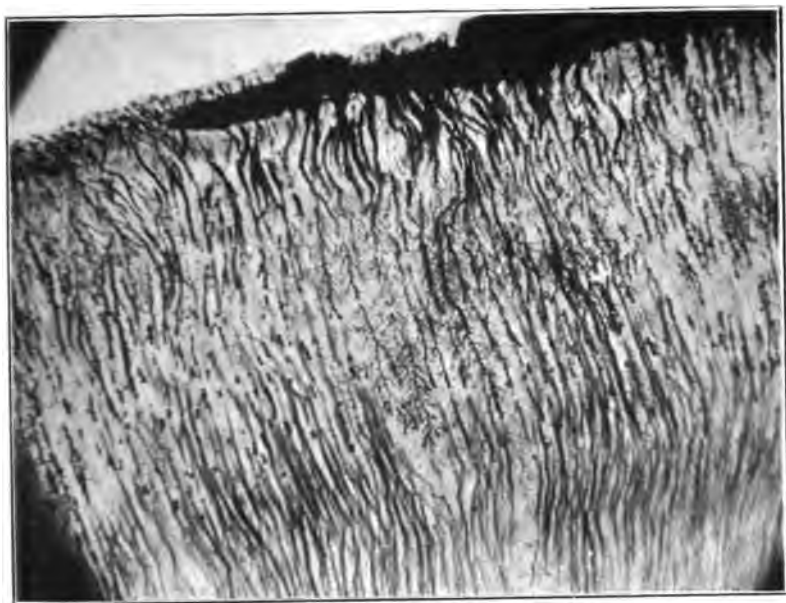
As ordinarily seen, the dentinal tubules present the appearance of unbroken lines, passing outward from the pulp-chamber to the border of the enamel and cementum; here they divide into two or more branches, which in some instances appear to enter the interglobular layer. Long branches from the main tubule are in some instances given off; these run parallel to it, and may appear at any place between the border of the pulp and the interglobular layer.

Specimens stained with silver salts show other, shorter branches, which pass outward from the main tubule into the basis-substance of the dentine. These do not run parallel to the main tubule, and are apparently lost in the substance of the dentine. Not in all silver-stained specimens do they appear, but I attribute this to the failure of the stain to act, rather than to their non-existence.

Several specimens which I recently obtained from permanent and deciduous teeth show very beautifully, and demonstrate more clearly than do any illustrations which I have so far seen these lateral branches, which begin at the border of the pulp-chamber and crop out at intervals all the way to the intergranular layer.

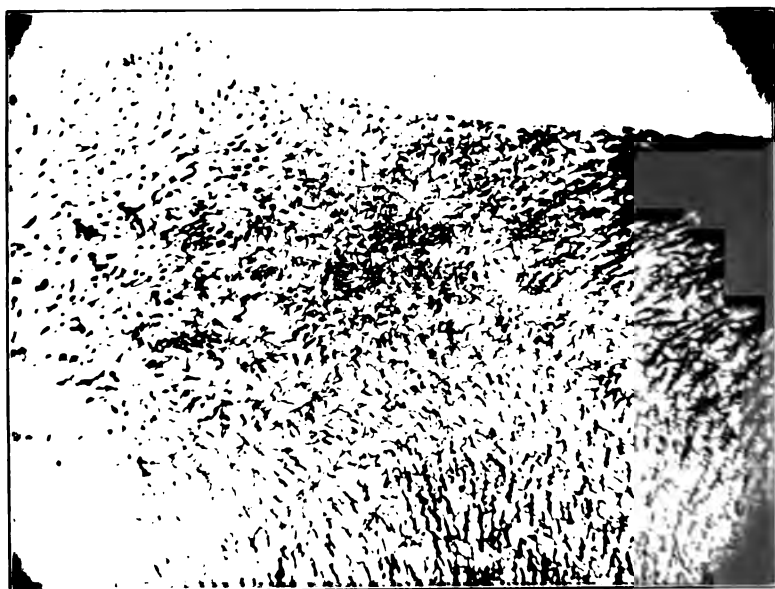
In addition I find these branches to be *subdivided*. This is shown in the illustrations which accompany this article. Fig. 1

FIG. 1.



Longitudinal view near pulp-chamber.

FIG. 2.



Cross-section from another field of Fig. 1.

is a longitudinal view taken near the pulp-chamber. The specimen was ground from the palatal root of a sixth-year molar extracted from the mouth of a boy nine years of age. The field is midway of the root. Fig. 2 is a cross-section view taken from another field in the same specimen. Here we see a most intimate interlacing of the lateral branches.

Dr. Andrews says that the semicalcified tissue next the pulp is more readily acted upon by silver stains than is the fully calcified portion of the basis-substance. Looking at these photographs casually, this would appear to be so, but in places where the specimen is ground thinner the ends of the tubules are clearly defined from the basis-substance, showing that it has not primarily taken the same stain as the tubules.

I do not present this article to champion the views of Dr. Heitzmann or his school, but to show that I have obtained certain results in my work, photographs of which demonstrate a more intricate net-work of branches from the main tubules in the dentine than is generally believed to exist. These branches I believe to contain the same substance as the main tubules, that is, protoplasm.

In addition, let me state that I have observed in some of my specimens a certain tinting of the basis-substance of the dentine. I find this in that portion of the basis-substance farthest removed from the pulp-chamber, what we would consider fully calcified matrix. Being nearer the surface it was longer exposed to the action of the stain. Would this not suggest channels of communication other than those which I have demonstrated?

THE FUTURE OF PORCELAIN WORK.¹

BY N. S. JENKINS, D.D.S., DRESDEN.

PORCELAIN has always been a somewhat intractable material. Its first application to artificial teeth was unpromising. Neither substance nor color became reasonably practicable for many years, but eventually manufacturers overcame all difficulties and now are

¹ Read before the Swedish Dental Society, Stockholm, August, 1902.

constantly presenting us with forms and shades which are as useful as they are novel. It is, however, during the last ten years that porcelain, for other purposes than artificial teeth, has become the subject of elaborate experiment, and the progress which has thus far been made is of a most encouraging nature. By means of porcelain we are now able to make restorations of the most elaborate character in the natural teeth, and also to make pivot teeth and bridges of great strength and beauty.

There are many reasons why this work is regarded with favor. Its use is possible with very little strain upon the nerves of the patient or the operator, and the results obtained leave little to be desired in appearance or usefulness; but to secure these results requires an attention to exact manipulation which leaves nothing to chance or imagination. Careless operators are quickly condemned by these methods, but the work of skilful and patient dentists may reach a perfection hitherto unknown.

For a long time it was erroneously supposed that high-fusing bodies must of necessity be stronger than low-fusing bodies. This has been a natural conclusion, since all experiments in the direction of such materials for dental purposes have been based upon, or influenced by, the methods used in the manufacture of artificial teeth. In my paper, published in the *Dental Cosmos* for February, 1902, you will have read the table of statistics which shows the superior specific gravity and the greater strength of porcelain enamel, facts upon which I need not dwell. Let me, however, explain why, in high-fusing bodies for inlays and pivot teeth, the strength and density of artificial teeth cannot be obtained. The materials of which an American tooth is composed are subjected to considerable pressure in the mould in which it is formed. This establishes a density, through bringing the particles in more immediate contact with each other, and enables the flux to unite the infusible ingredients more perfectly than is possible in any other method. To compensate for inability to exercise pressure upon material designed for inlay work was one of the greatest problems in the evolution of porcelain enamel, and the solution was found not only in exact and elaborate preparation of the body, but also in a method of fusing, which enables one to perfectly control the heat and to accurately observe the progress of the melting. These conditions are seemingly impracticable with high-fusing bodies.

The increasing use of porcelain in the future, until it occupies

the chief place in dental practice, seems to me to be assured. It is so evidently superior to the old methods, in nearly every particular, that it is certain to win its way. One by one the difficulties of working porcelain bodies have been overcome, until now, instead of being a complicated art to be practised only by specialists, it has become a simple and logical process, yielding results as exact as chemistry or mathematics. It requires only the skilful hand and the trained mind of any educated dentist, who has such breadth of culture that he can frankly reverse some of the methods he has learned to apply to gold work, to produce, in his daily practice, results as useful and practical as they are immeasurably beautiful.

Reviews of Dental Literature.

EXTRACT OF THE SUPRARENAL GLAND IN DENTISTRY. By Fritz Moeller, Berlin.¹

Extract of the suprarenal gland has been used for the last ten years, especially in England and America. Owing to the variations in the preparation of the product its use has been much limited. During the last year Professor Rosenberg, in Berlin, has undertaken important experiments with this agent. According to him, the anæmia which follows the application of the extract to the mucous membrane of the nose is responsible for the lowering of the sensitiveness of this membrane. When combined with cocaine it produces an anæsthesia which penetrates even to the bones. The use of the drug is without danger, and does not induce a drug habit. Rosenberg has succeeded by the use of the extract in amputating the middle turbinate bone without loss of blood to the patient and without pain. In speaking of the physiological action of the suprarenal gland, the author says that it constantly secretes a substance which increases the blood-pressure and holds it at a certain level. Its presence is necessary for life. In the case of animals where it has experimentally been removed, death has followed in every case.

¹ Nebennierenextract in der Zahnheilkunde, von Zahnarzt Fritz Moeller, in Berlin. Deutsche Monatsschrift für Zahnheilkunde, 23 September, 1902.

The bodily temperature which is lowered by injury to the gland can be raised by an injection of the suprarenal extract.

The chemical properties of the extract are not destroyed by heat until a temperature of 110° C. is reached, so that it can readily be sterilized. When treated with ferric chloride it takes on a characteristic green color, which, by absorption of oxygen from the air, becomes red and later brown. Locally applied, it increases the blood-pressure and develops a local anæmia.

Experiments upon dogs, rabbits, and cats show that when twenty grammes of the five per cent. solution is injected for eight days in succession they still hold their weight and eat well. The author has injected into his own lower arm eight cubic centimetres of a five per cent. solution in one day. No elevation of the pulse or temperature could be determined. After twenty-four hours sugar appeared in the urine, but disappeared in twelve hours' time. In experiments upon animals, Bluhn and Zülzer have established the fact that after an injection of the extract sugar appears in the urine, but no impairment of the health follows.

The author considers the American and English preparations of suprarenal capsule unsuited for dental use. He says that in order to make them stable they are mixed with bromide of camphor compounds or iron salts. These substances influence unfavorably the hæmostatic action of the preparation. The author speaks favorably of the preparation made by Freund & Redlich, Berlin. This preparation is, however, not altogether satisfactory to him, and he makes one for himself as follows: From fresh calves' and cows' suprarenal glands a one per cent. solution is made; this is immediately sterilized and sealed up in brown glass capsules holding five cubic centimetres. This preparation is almost as clear as water, and free from albumin, lecithin, and pyrocatechin, and is of remarkable efficiency. After the capsules are cold they are again heated in a sand-bath at 108° C. for twenty-four hours. The author then prepares capsules which contain the following drugs: Cocaine mur., 0.01; morph. mur., 0.001; aqua destill., 1.00. As preparatory to use the contents of the two capsules are mixed. The injection is made, for purposes of extraction, one to two millimetres from the edge of the mucous membrane under the periosteum, in a direction parallel to the root of the tooth, and the whole region is rendered anæmic. Freienstein's infiltration syringe is used. The author uses the preparation freely, sometimes five cubic centimetres. The

preparation contains less cocaine than the weakest Schleich solution. The extraction is entirely painless and the bleeding astonishingly small.

WILLIAM H. POTTER.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the office of Dr. C. D. Cook, No. 162 Remsen Street, Brooklyn, N. Y., on Tuesday evening, June 3, 1902, the President, Dr. Howe, in the chair.

The minutes of the last meeting were read and approved.

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COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. F. Milton Smith.—A practical point occurs to me, and the satisfaction I have had in its use prompts me to speak of it. Our president, Dr. Howe, called my attention to it first. It is the use of the precipitate of silver for absorbing the excess of mercury from amalgam fillings. Formerly I used the plastic forms of gold, but the gold is not nearly so efficacious. I am in the habit of getting it from Eimer & Amend, Third Avenue and Eighteenth Street, New York. It is a powder, and costs one dollar and twenty-five cents an ounce. Dr. Howe tells me that his method of using it is to make his filling a little full and then cover it with the precipitate of silver; the precipitate and surplus mercury will come off in a scale, leaving the filling clean.

Dr. Shaw.—May I ask what advantage the precipitate has over a portion of amalgam squeezed very dry?

Dr. Smith.—I invariably do squeeze all the mercury possible out of the amalgam, but even then there will be an excess which the precipitate of silver takes up very nicely.

Dr. A. H. Brockway.—I have always thought it of very great advantage to mallet in my amalgam fillings under a pellet of bibulous paper; in this way if there is any excess of mercury it is brought to the surface, where it can be readily wiped off or absorbed. I should suppose that this precipitate of silver would be

of advantage in effecting this absorption where necessary. I have sometimes used pellets of gold and sometimes tin-foil. I think the malleting is a decided advantage.

Dr. W. M. Whitlock then read his paper entitled "Importance of Details."

(For Dr. Whitlock's paper, see page 893.)

The President.—We are very much indebted to Dr. Whitlock for the painstaking care with which he has presented this subject. Discussion of the subject is now in order.

DISCUSSION.

Dr. Chas. O. Kimball.—I think we should thank Dr. Whitlock for the phraseology with which he has introduced this subject. The question of details in our work can never be brought too closely before us. With our different ways of working we sometimes fall into habits that are not the best, and so a careful presentation of any man's carefully thought out method of doing small things, I have found, in my own case, to be of the greatest assistance.

There is one thing Dr. Whitlock mentioned that I would like to call special attention to, and that is the measurement of roots and the marking of broaches. It has been my habit for a good many years to have in my pocket a little scale marked to thirty-seconds of an inch, and in opening roots I measure them in all cases. I mark the instrument used for this purpose with a bead of shellac about three-quarters of an inch from the end. This is done by warming the instrument and touching with a stick of heated shellac. Formerly I used to mark the instrument with a file nick, but the objection to this is that it makes a weak point in the instrument, and a bit of rubber dam, which is sometimes recommended, is liable to slide; but with a bead of shellac on a probe you can go into a canal to the point desired and there stop with the greatest certainty. For instance, in a tooth where there is a marked opening at the apex, with a fine broach with a little hook on the end the exact length of the canal can be ascertained; then by marking a plugging instrument in this way, you can feel to a certainty that your filling-material goes to and no farther than the apex.

As for sharpening pluggers in the manner described, by passing them through a little piece of wood and sharpening on the oil-stone, I found years ago that a little piece of hickory well dried has a loose porosity through which you can pass the end of a broach.

The piece of wood needs to be about one-eighth of an inch long, cut squarely across the grain. An instrument so sharpened, if examined with the glass, will be found to have a perfectly square end with sharp edges on all sides so that they will catch the most minute fibres of silk and carry them up into the root, while an instrument sharpened in the usual manner by holding between the fingers will show the sides rounded so that it will slip through the material that is being carried into the root.

These two points, it seems to me, will bear emphasizing very strongly, using always marked instruments when examining and filling canals and sharpening plugging instruments with clean square surfaces in the manner described.

Dr. S. E. Davenport.—We are indebted to Dr. Whitlock for his careful presentation of this subject, and particularly for the accuracy of the system he has devised. Our Institute is certainly a body before which to bring the description of a carefully systematized method, for I believe we appreciate all such and frown upon the reverse. A point which has impressed my mind, because of some recent events, was the suggestion made by Dr. Whitlock that we do not attempt to open into the roots of a molar from a posterior approximal or a buccal cavity. This last week I have seen in the office of my associate a most lamentable result of an attempt on the part of a dentist in another city to open into the roots of a third molar through a buccal cavity.

The President.—I believe there is material for an evening's discussion upon this subject, but as we are not prepared to go into it to-night we will listen to the next paper on the programme, by Dr. Fuller.

A BRIEF ADDRESS.

BY DR. D. A. FULLER.

MR. PRESIDENT AND GENTLEMEN OF THE INSTITUTE,—Just a few words on the use of sulphate of quinine in the treatment of periodontitis, especially when patients give history of malarial poisoning. In making a few notes on a rather interesting case that came under my care during last July I am aware that there is something of a prejudice existing among the medical and dental profession regarding the use of quinine. For my own part I am very much in favor of the drug and believe the good effects far outbalance the deleterious.

The patient in question was Mrs. F., the wife of a college professor. She came to my office on Monday, July 8, with all the symptoms of an incipient alveolar abscess of the left inferior second bicuspid.

The local dentist of the town where the lady came from had removed the filling from the tooth, and I found the pulp-canal open at the time. She described the pain as having been intense, and had slept but little during the previous forty-eight hours. I examined the tooth and gave her but little encouragement of preserving it (except in alcohol), especially as she wished to start on a Canadian trip the latter part of the following week. However, I told her that we could at least give the tooth a trial and extract as a last resort. She informed me that she would remain a few days in Brooklyn, if necessary, for treatment.

I first syringed the tooth repeatedly with hot water and then placed a piece of cotton very loosely in the cavity to keep out any foreign matter. I also ground the cusp on the opposing tooth so that the two teeth did not meet. In the mean time I had learned that the patient was subject to frequent attacks of malaria, and I decided to give the quinine a thorough trial during that day. It was then about ten o'clock. I instructed the patient to take eight grains of quinine at once; in fact, I sent out for it and saw that it was done. I then advised her to continue it, in two-grain doses, during the day at intervals of about an hour; and with these instructions she left the office.

She called me up on the 'phone about five o'clock that evening and said that the intense pain had about subsided. The next day she 'phoned me again and reported that she had slept very well, indeed, during the night, and would not visit me that day unless I thought it necessary. I instructed her to keep on with the quinine, taking the doses rather less frequently than the day before, with a limited diet.

She came back the next morning, which was Wednesday, and, as an Englishman would say, was in "a very fit condition." The tooth had receded almost to its normal position, and had tightened very perceptibly in the socket, showing that the inflammatory condition was greatly relieved. I will not elaborate on the future treatment except possibly the latter part.

I sent her to her country home the latter part of that week in a very comfortable condition. I placed an antiseptic dressing in the canal, with cotton and sandarach over this. The lady returned to

Brooklyn the first part of the following week, and I placed a temporary filling in the root and filled the crown with soft gutta-percha, easily removable by the patient in case of recurrence of the lesion.

Mrs. F. went to Canada for two or three weeks and returned to Brooklyn on October 8, having experienced no difficulty whatever, and so far as I know, up to the present time, no unfavorable symptoms have developed.

A rather curious incident in connection with this case was my discovery that the tooth directly in front of this (the first bicuspid) contained a devitalized pulp. I treated and filled this tooth permanently during the first week of Mrs. F.'s visit to Brooklyn.

In conclusion, then, I will say that for the past six or seven years I have prescribed quinine in a large number of cases, and have almost invariably found that the patient has been relieved and a considerable number have been very greatly benefited.

Where the malarial symptoms are prominent in an asthenic person is where, in my opinion, the use of quinine is indicated.

DISCUSSION.

Dr. Davenport.—I would like to ask Dr. Fuller whether in this case he did any less for the tooth in the way of treatment than he would had he not prescribed quinine?

Dr. Fuller.—No. I gave the tooth the same treatment that I would have given it in all ordinary cases, but I find the quinine helps me out in these cases many times. I had a case the other day, to diverge a little, in a patient who had suffered a great deal in an attempt to devitalize a tooth. I found, upon questioning her, that she was subject to malarial attacks, and I put her under the quinine treatment. I did not apply the arsenic that night, but after washing out with hot water I applied a sedative to the pulp. The next day, while all the pain had not subsided, she was greatly relieved, so much so that I applied arsenic by drilling through the crown of the tooth, putting in a minute bit of arsenic and morphia, and something in the large cavity to quiet the tooth. I also kept her under the quinine treatment. That was three or four days ago. She came to the office yesterday, when I gave her a half-hour sitting and removed the pulp.

Dr. Brockway.—I would like to ask Dr. Fuller if he employs any other means than simply washing out the tooth with hot water. It seems to me that it would have been well to have gone into the root and cleansed it out mechanically as much as possible.

Dr. Fuller.—I think I stated in the case I mentioned that the tooth had already been treated. The fact is, it had been pretty nearly treated to death, and was so loose that I could have taken it out with my fingers.

Dr. Brockway.—I asked because possibly Dr. Fuller may have thought he could not work on the tooth because of its extreme soreness. In these cases where a tooth is so tender that it is practically impossible to work on it I have had excellent success by applying a Perry separator, thus holding it firm. I remember one case of a lady who came to me with a dying pulp in a third molar. The tooth was so tender that she could not close her mouth without causing great pain. By applying a separator I was able to open and thoroughly disinfect the tooth in an entirely satisfactory manner. I wish to commend the use of hot water. I place great reliance in it.

Dr. Davenport.—The reason I asked Dr. Fuller the question I did is that we are apt to attribute recovery to the last medicine that has been taken. One part of the treatment he administered was enough in itself to aid in the recovery of the tooth, and that was what Dr. Codman, of Boston, used to call the "grindstone cure." If the tooth itself is too tender to grind, then do as Dr. Fuller did, grind the occluding tooth. That alone is often sufficient to cause the tooth to get well.

Dr. F. Milton Smith.—I have never had any experience in the use of quinine for the relief of such conditions as Dr. Fuller has mentioned, but I have had many cases where liberal doses of quinine relieved people suffering, some of them for weeks, with a form of neuralgia, the cause of which seemed almost impossible to trace. Because of this I have confidence in liberal doses of quinine in obscure cases of neuralgia which manifests itself in the nerves of the jaws. I have seen a number of cases where liberal doses have, within forty-eight hours, driven away and kept away the neuralgia, the treatment being continued for some days. Sometimes the pain has not appeared again for many weeks, when it has been necessary to repeat the treatment.

If I may digress a little I would like to mention the very great help I have had in the use of a string tied around very sore teeth where it is necessary to open them for relief. During the absence of Dr. Allen this spring one of his little patients, about ten years of age, who had broken off a tooth by a fall, and in which the pulp had died, fell into my hands. When the little fellow came in the

tooth was so sore he could hardly bear the touch of his tongue to it. I tied a silk ligature around the tooth and then told the little fellow that if he would carefully draw on that till he got it real tight I would see what I could do. It was a revelation to me. I drilled into the tooth and took the pulp out as prettily as could be and without an expression of pain from the little fellow.

Dr. J. Morgan Howe read a paper entitled "Notes on Methods of preventing Decay."

(For Dr. Howe's paper, see page 888.)

DISCUSSION.

Dr. Kimball.—I wish to thank Dr. Howe for adding his word in connection with the conservation of the teeth, for I have felt very strongly that while we may and should remove disorganized tissue, or that which is only partially disorganized, cutting away sound tissue for a possible future good while we have other means at our command which may produce the same result has seemed to me hardly justified. So long as we find, in cases of teeth markedly liable to decay, that when we can induce the patient to care for them properly we can check decay, even in such a mouth, it does not seem to me quite fair to the teeth to cut away sound tissue for the mere purpose of preventing decay. As for the means made use of for doing that it is not necessary for me to speak. It is by, I might say, "hourly care," or, rather, meal-time care, cleaning the teeth whenever they are soiled, as invariably as you wash your hands whenever they are soiled, and in such a way that the teeth are made clean. You and I—all of us—have seen the result of such care in our practice. How it may be in some cases where patients will not give the proper care I am not prepared to say.

Dr. Smith.—One thought that Dr. Howe brought out in his paper, it seems to me, we ought to always have in mind in filling approximal cavities, and that is that the joint between the metal and the tooth should not come in contact with the adjoining tooth. It seems to me this is the secret of success in filling teeth that are decayed on approximal surfaces. This can be done in very many cases, if the teeth are sufficiently separated, by cutting away comparatively little tooth-structure. I have in my own practice many cases that have been filled in this way with comparatively small gold fillings. The fillings are so contoured out that when the teeth come together nothing but gold touches. It would seem to me folly to

cut away sufficient to hide all the margins under the gum or bring them out to the surface.

Dr. Kimball.—May I ask a question? I recently had occasion to wedge apart a couple of teeth for a young lady twenty-two years of age, who, to my knowledge, has been extremely careful in cleansing her teeth, keeping them in very good condition. There was trouble between the right lower first and second molars, and I wedged them apart pretty thoroughly. I found the point where the teeth came in contact to be sound, but there was a spot of decay on either side of this point, just inside and just outside, two marked cavities in each tooth. The section of tooth between them was sound, just a little discolored. In treating them I cut through, making one cavity, and it was pretty hard work. Now, why did they decay where there was no contact, and why did they not decay where there was contact; and if I had had a gold filling at the point of contact, would not decay have started at the edges of the gold?

Dr. Davenport.—It seems to me that Dr. Howe's paper is extremely original. He calls to our mind that, having cut away decayed and softened tissue, we have reached a point where the influences that combine to disintegrate the tooth-structure do not exist, and, as this portion of the tooth has already resisted such influences, asks why it should be removed. This is a point we may well ponder over, for there is a great deal in it. Another point that attracted my attention particularly was the reference to Dr. Arthur's suggestion that after his method had been practised great care be taken of the teeth. Dr. Howe evidently believes that if the increased care be given to the teeth it would be unnecessary to cut away the tooth-structure that Dr. Arthur's disciples remove. We have about arrived at the point of believing that clean tooth-substance does not decay, and if we can by any means increase the care of our patients, it seems to me we will be better able to conserve the tooth-substance.

Dr. Brockway.—The point mentioned in Dr. Howe's paper regarding Dr. Arthur's requiring unusual care in cleansing these surfaces also struck me as being particularly sound. I firmly believe that if great care were to be bestowed upon cleansing the teeth it would not be necessary to cut away tooth-structure nor to fill the teeth at all. I believe decay can be almost wholly prevented by proper cleansing, and I hope you have all read the papers of Dr. Smith upon that subject. I think he has contributed more to the

successful practice of dentistry, which means the preservation of the human teeth, than almost any other writer upon the subject. It seems to many patients a great task to come to the dentist as often as Dr. Smith suggests for the purpose of having their teeth cleansed and the gelatinous plaques removed, but in speaking to a well-known clergyman upon the subject one day he remarked, "Why, it seems to me that it is no greater task than people are willing to submit to in going occasionally to have their hair cut or in the case of a man going daily or every other day to be shaved." And when you come to think of it, it does not amount to any more. I do believe that if people gave as much time to the cleansing of their teeth by a competent operator as they do to having their hair cut or being shaved, decay would be almost wholly prevented.

Dr. C. D. Cook.—Perhaps if the dentist made his fee in proportion to that of the barber, patients would be willing to come more frequently.

Dr. Brockway.—But consider how much more important the teeth are. I believe dentists could be brought to take that stand more generally.

Dr. Cook.—Referring to the last remark of Dr. Brockway, that if the dentist would take more pains to instruct his patients how to take care of their teeth they would take better care of themselves, I would say that I think dentists do this very thing far more than the general practitioner instructs his patients as to the care they should take of their health.

The President.—Dentists, as a rule, perhaps, do more than other professional men to make their work unnecessary. There is no doubt if they do all possible in that line there will still be a great deal to be done.

Dr. E. A. Bogue.—I have been told six or eight times within the last few days, by refined lady patients, that never in their lives, until I told them, had they been told how to cleanse their teeth. I am only anxious that we do not flatter the rest of the brethren to such an extent that they go home and fail to tell their patients what they need to do, when all of us in this room know the telling to be so necessary.

Dr. Kimball spoke of a couple of molar teeth that were not decayed at the point of contact, but were decayed on either side of that point. I believe, in every case where I have seen this condition, I have seen defectively formed teeth. Let me call at-

tention, Mr. President, to the fact that some people are born with club feet and some with bow-legs, and some there are who have malformed teeth. I do not mean necessarily distinctly malformed, but malformed perhaps because of the civilization in which they and their ancestors have lived for several generations. In teeth that are flat-sided the sides are too flat to be cleansed by the silk or brush except at the point of contact. These cavities exist because of the shape of the teeth.

Dr. Howe, nearly at the end of his paper, read a pretty long sentence, and I only got a part of it. As I have it, he said, "The time may come when we may produce such changes in the oral fluids as shall tend towards a diminution of decay." This is right in the line of what Dr. Black brought out three or four years ago when he spoke of inoculation against the decay of the teeth. This seems to be based upon the assumption that the fluids of the mouth have to do with decay of the teeth. I am getting around to the point of thinking that this is chimerical, as the saliva, urine, and every other fluid in the body of a healthy person is sterile. Its tendency is not towards decay or the nourishment of bacterial life. I think that after we look into this question more we shall conclude that the so-called plaques of Williams, the temporary immunity from decay of Black, and the condition that we sometimes find in mouths for one or two years and then see the conditions change altogether, are in all cases due to the fact of uncleanness. I will instance the case of a child that is born tired and that never becomes vigorous. The teeth never were properly formed, and the child never has had gumption enough to properly cleanse them, while the brother or sister of that same child will be a strong and vigorous person. In the case of the latter child, the very way he masticates his food or takes a drink of water tends to cleanse the teeth, while the other does everything in such a languid way that his teeth are never clean. Decay has come from something on the teeth which ought not to be there.

Dr. Wheeler.—Have there ever been any comparisons made to note if there is less recurrence of decay in mouths where extension for prevention is practised than in those cases cared for by careful but less radical practitioners?

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.

Editor The New York Institute of Stomatology.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

(Continued from page 847.)

Third Session, Wednesday Afternoon, June 11, 1902.

THE meeting was called to order by the chairman.

A paper entitled "A Comparative Study of the Attachment of the Teeth" was read by Dr. Frederick Noyes, of Chicago.

(For Dr. Noyes's paper, see page 639.)

DISCUSSION.

Dr. Eugene S. Talbot.—The drift of this paper rather confirms that of my own read this morning. The evolution of teeth and their attachment is very similar to that of the dental pulp. In the placoid scale, from which all evolution must start, the fibrous tissue that goes to form the inner part of the tooth has much more nourishment. The pulp keeps up a constant nourishment for the scale throughout the life of the animal. In the second class, where we have the tooth of the shark and the tooth of some of the fossil birds, we have the hinged joint. Where the teeth lie along the borders of the jaws in a fibrous depression we have the highest type of physical development of the teeth. We have the cone-shaped teeth with an immense blood-flow keeping the structures in healthy condition. As we ascend the scale, taking up the third form of teeth attachment, we see changes in the alveolar processes for the purpose of making sockets for the higher tooth development. We have the roots of the teeth developed. The difference in the evolution is very important in the teaching of students.

Dr. Vida A. Latham.—I would like to know if true ankylosis has been found in the human? I once had a case which I let Dr. Ford examine, and he thought it as near true ankylosis as he had ever seen, but said he had never known it to occur. I do not say it was overgrowth of the cement, but the jaw was broken in getting the tooth.

The author states that the odontoblasts are first formed on the surface of the pulp. I would like to ask, Why do they form there? There is no more dentine on the surface of the teeth than there is laterally. Another point. Do teeth that are moved in irregularity

cases increase in the amount of connective tissue? They may, and that may also cause some teeth to die from circulatory disturbance. I would like to know of some irregularity work and have a chance of extracting teeth to decide this point. We sometimes have fibrous tissue reformed, but usually it lowers the vitality. That would also bear on the different types of teeth.

Dr. E. A. Bogue, of New York City, read a paper entitled "Observations on some Recent Cases of Orthodontia," with illustrations.

(For Dr. Bogue's paper, see page 869.)

DISCUSSION.

Dr. E. S. Talbot.—I wish to take exception to the use of the term contraction. The term has crept into the profession without knowing the etiology of the conditions represented in these cases. There is not a contraction. It is an arrested development. Contraction means a condition in which a jaw has reached a certain size and then has grown smaller. Here, and in all of the cases where one jaw is smaller than the other, the term is not a proper one, and it is misleading.

There are two objections to taking hold of irregularities at this particular time. The roots of the permanent teeth are not properly formed, and moving has a tendency to produce deformity of the roots. This has been seen in children who have struck their teeth. The second objection is that when arrest of development takes place we do not know whether that jaw will develop. There may be an arrest of development that never will progress. The arrest may take place in the temporary teeth and not in the permanent. Moving of the teeth is not advisable, because we throw them out of the surface of the alveolar process and there is little or no bone left on the outer border. Such a case is illustrated in Tomes's work on Dental Surgery, where teeth erupted on the outer border of the alveolar process. There is an advantage, on the other hand, in assisting naturally in developing the alveolar processes and the jawbone.

I do not think there is a change in the roof of the mouth as mentioned by the writer, but in the alveolar processes. Some of our neurologic friends in New York have made a great mistake in that point. A paper before one of the societies, I think it was the Odontological Society, spoke of a change in the vault, and there was

not a single case reported that shows a particle of change. There was rather an hypertrophy in the alveolar process. This hypertrophy is very common among neurotics. These two children operated upon are certainly what we call degenerate children. I think Dr. Bogue has done a magnificent piece of work, and he has been assisted by the children going abroad. Had they stayed at home the chances are they would not have gotten on so well. This brings up a point that is not mentioned in the text-books,—that all of these children who have arrested development of the jaw are neurotics and degenerates. The presence of the arrest shows that the system is unstable. Whether to commence this work so early or at the period of puberty is a difficult question. I venture to say that if the doctor will watch these children he will find that from twelve to sixteen they will be found very irritable and nervous. Such is my experience in twenty-eight years of practice.

Dr. Bogue.—I would like to ask Dr. Talbot to define what he means by “degenerate.”

Dr. Talbot.—One whose nervous system is unstable and whose physical development is a departure from the normal.

Dr. Latham.—The work of painless regulation cases is a very, very strong point. To me these cases are the most objectionable, for the conditions wear upon the nervous and mental system of patients and parents. I was glad to hear the doctor speak of the second and third nut. The little folks will turn the appliances with their tongue back to the old place. If the second nut controls this I am exceedingly glad to know it.

One question from a developmental point. In a vertical section through the face the lower jaw shows a pronounced eruption compared with the upper. I wondered if this made any difference in the eruption of the processes.

Dr. J. L. Williams, Boston.—I want to express my approval of this painless operation. My habit has been always to remove the pressure at the first indication of pain. The instrument can be moved intermittently without harm. I have seen mischief resulting when the rubber was not watched. In one case after careful correction of the lower teeth, at the urgent solicitation of the patient's mother and the advice of the former dentist, the regulation of the upper teeth was commenced, with the provision that the patient should come to me for further instructions. This she neglected to do, and though there was much pain, she thought mind was superior

to matter, and when I next saw her one of the incisor teeth was dead. The regulation intermittently of teeth is the only safe method.

Dr. E. A. Bogue (closing the discussion).—I accept Dr. Talbot's exception very gladly, but will take the liberty of repeating what I did say,—that there was a perceptible change, which lasted temporarily, of the shape of the roof of the mouth. I did not mean that anything but the gum was really affected. In the regulation cases the alternate work and rest is the only way to accomplish results with entire propriety and health. The extraction of teeth to make room is something never as fully understood by me as it is to-day, and I understand it after a pretty severe lesson. I have now in my possession notes of upward of two thousand patients who have passed through my hands, in whose cases I have models taken year after year. The changes that take place before extraction and after extraction are thereby before our eyes. These illustrations of the conditions at varying dates have shown me that the Creator knew a great deal more than we do about how to make room; for the cusping of teeth, upper and lower, with each other is an absolutely essential thing if the mastication of our food is to be performed as nature intended. One of our most noted dental surgeons admitted that the question of occlusion had not been prominent in his mind; that his work had been solely for the appearance of the teeth and not utility. Starting with the principle that the arch generally needs to be extended, and that the cusping of teeth will almost always hold them in place once they have been gotten into place, I inferred that it was much easier to do for a growing child what was required than to wait until that child was more nearly formed, and Dr. Williams's plan has always been operative with me whenever such work has been undertaken with children. I have been very much pleased that these children have never even complained of pain.

Dr. Talbot's definition of degeneracy does not altogether apply to this little chap. I would sometimes address him in German, French, or English, and he would answer with perfect facility. He is as well versed in lessons as a boy of fourteen. I have never seen his superior in intelligence. I acknowledge that he is nervous and that he is delicate. He is a boy who seems to be standing in a precarious condition, and his mother knows it full well. She, too, is one of the brightest women I ever met.

Regarding Dr. Latham's question, I am not able to answer whether the development of the teeth was in the way she mentioned. In these cases I am quite sure that the teeth developed after removal of the obstructions with much greater rapidity than before. What the condition of their roots may be, of course, no one knows.

Dr. G. Lenox Curtis, of New York, read a paper entitled "Electric Ozonation in Neuralgia."

(For Dr. Curtis's paper, see page 635.)

DISCUSSION.

Dr. J. L. Williams.—What is the process of the ozone treatment?

Dr. Curtis.—I regret exceedingly that the room will not allow me to demonstrate the method; an electric current is necessary. It is applied through a vacuum tube from the street current. The amperage is reduced so that it is perfectly harmless, and the ozone is forced in through the body, so that any internal inflammations are reduced by the action of the electricity and ozone. When I say electricity and ozone I mean electricity, and my definition of electricity is ozone. I have tried to give a definition of electricity, and treated the subject in a paper before the Congress on Tuberculosis, telling how tubercular cases may be cured.

Dr. Williams.—Is the apparatus to be seen at any special place?

Dr. Curtis.—It is being put on the market.

Dr. Bogue.—Is not ozone produced by the atmosphere?

Dr. Curtis.—The molecules of ozone in the atmosphere are broken up. It is done by inhalation and by being forced into the tissues. There are great quantities of it given off, so that it is possible to fill a small room sufficiently for a person to sit or lie in it so that it oxidizes the pathogenic conditions in the body through inhalation or by passing through the body. It can be used with both currents, but the same machine will not answer for both.

Dr. G. F. Eames, Boston.—I have always understood that ozone is the effect of the electric current upon the oxygen in the atmosphere, and it is difficult to see how this goes through the body, inasmuch as the patient must breathe while it is being applied. I see how, by being taken into the lungs, it can be taken into the blood and through the circulation, but the other way of driving it through the tissues I do not understand; whether it is by the same means as cataphoresis.

Dr. Curtis.—My explanation that the ozone does pass into the body lies in the fact that in deep-seated congestions, for instance, congested lung or inflamed liver, when the current is applied over the spot the pain is immediate. In normal tissue there is no pain when electricity is applied. On further treatment the pain subsides and the current passes as through normal tissue. Also, the breath emits the odor of ozone for hours after treatment.

Dr. Eames.—The disappearance of pain would not prove to me that this ozone is driven through the tissues, because surface applications will often cause pain to disappear.

Dr. Curtis.—I do not think Dr. Eames's question can be answered. A great many scientists, however, accept my reasoning. There is no means of telling at present that the current of electricity is really passed through the body. We know that it traverses the surface. I reason that it does pass through because of these changes.

Dr. William Knight, Cincinnati.—We all know the stubborn character of real neuralgia, and that it shows a condition of the nerves which is not normal. Innumerable methods have been adopted in their time, and in special cases are of service to-day. The object of all methods is first to remove the local irritation and then correct the systemic predisposing condition. I would be very loath to believe that pain due to inflammation, to bacterial origin, or pain not neuralgic, is to be suddenly wafted away by something that is called ozone. But, if we have a method which can cure this terrible disease of neuralgia so readily, it is a grand thing, and I would compliment any gentleman who has made such a discovery. Up to the present time the condition has baffled the ingenuity, research, and clinical observation of men in this country and abroad.

Dr. Curtis (closing the discussion).—I hope to exhibit the machine to-morrow in the Section on Medicine, where I am to read a paper on "Ozonation upon the Blood," showing improved conditions in the blood. I have been able to get rid of certain pathological conditions present at the beginning of treatment. It will certainly destroy pain, increase nerve-force, improve circulation, and produce assimilation rapidly. I have had cases in which two and one-half grains of morphia were employed daily, and after the first treatment pain ceased and was absent for six months, the treatment being continued throughout the first month every day or every other day. The patient's health so greatly improved that he was able to come to my office a distance of ten miles in a street car,

against coming in a carriage and in a very feeble condition. His mental condition, which was badly impaired also, was completely restored. I could cite many similar cases. I have had cases of rheumatism and gout cured apparently as readily as a dose of migraine tablets will relieve pain. The pain and stiffness of the joints entirely disappear under the treatment, so that the patient is restored to usefulness. The remarkable feature is the speedy relief. In some cases in which the patients have been actually sleepless and have suffered from gout for many years pain has entirely disappeared. In other cases weeks may be required to accomplish the same result. Some cases obliged to be carried into the office, in six weeks time have been able to take care of themselves. I think, therefore, that the results of treatment are entirely due to re-establishment of the equilibrium. The red blood-cells are increased, and the white diminished in number. The hæmoglobin is slow to increase. The red cells in chronic cases increase at about one million a month, while the white cells diminish at about eight thousand in the same length of time. In a case of blood-poisoning following abortion the patient lost at the time of the operation some two quarts of blood. There was gonorrhœal infection followed by septic pneumonia. In fourteen days from the first treatment the patient was sitting up, and to-day is perfectly well. All pus disappeared on the fourth or fifth day. The patient was so weak that she could not more than whisper. I saw her the day I left New York, and I have photographs of her blood taken at the beginning of treatment and after. When I began treatment the blood-cell count showed two million five hundred thousand red and sixty-four thousand white cells, the normal being from seven to eight thousand. On the twenty-first day there were three million eight hundred thousand red cells and twenty thousand white cells. The hæmoglobin at that time, which was not noted on the first examination, was sixty per cent. This has increased to eighty and there are five million red cells and eight thousand white cells.

Dr. William Knight, of Cincinnati, Ohio, read a paper entitled "The Modern Dentist from a Medical Stand-Point."

(For Dr. Knight's paper, see page 646.)

DISCUSSION.

Dr. A. E. Baldwin, Chicago.—There is little to be said upon this subject more than the essayist has said. I welcome any paper which

shows the need of greater breadth in our specialty, and I have been an earnest advocate of medical education of the dental student. I first studied medicine and practised for a number of years, afterwards taking up the specialty of dentistry. I think men are better qualified for the practice of dentistry by such a course of study and preparation. This section has done much to bring dentistry into its proper position, and has also exerted a great influence for good upon the general dental practitioners.

Dr. M. L. Rhein.—We all recognize the appropriateness of that which the essayist has presented to us. The need of educating the dentists of the future in the groundwork such as we recognize they should have is an important matter which should occupy our thought. This groundwork should be as thorough as for any department in the broad field of medicine. It is as difficult to differentiate between the normal and pathologic conditions of the mouth as it is those conditions in any other part of the body.

Dr. E. A. Bogue.—In the matter of reflex inflammations and of dental difficulties being at the base of ocular and oral troubles, it so happened in the cases referred to by Dr. Knight that there had been serious neglect. Here we as dental specialists can render valuable aid. While agreeing with all that has been said regarding curative methods, I feel that there are sometimes other methods to be adopted.

Dr. Eames.—I am grateful for the paper that has been read. It perhaps does not call so much for discussion as for words of approval, making emphatic the one grand principle we are all working for. It seems to me that such papers should be read before other sections of this Association.

Dr. Knight (closing the discussion).—I do not know that I have anything further to state. The object of the paper was to turn the attention of the medical and dental professions to the fact that there should be more co-operation between the two. Many practitioners are largely astray in their knowledge of dental affections. They need to be better informed as to when they shall direct a patient to a dentist. If we can get the oculist to more generally appreciate the connection of eye affections with the fifth cranial nerve, and if the dental student has impressed upon him the necessity for a practical knowledge of anatomy and physiology, much advance will be made in the relief of suffering. There is a tendency for specialism to become narrow. Adenoids have been taken out

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indiscriminately, and there has been hypertrophy of the alveolar process. In some cases operation is permissible, but in the majority of cases general treatment is sufficient to guard against the condition. Cicatricial tissue and secondary contraction take place after operation, and these may cause more inconvenience than the primary condition. I think the laryngologist should co-operate more with the general practitioner. Only a general practitioner knows how to treat many cases that go to the oculist. I think the time is coming when this general recognition will be shown to the dental surgeon.

Dr. G. F. Eames, of Boston, read a paper entitled "Oral Hygiene."

(For Dr. Eames's paper, see page 881.)

DISCUSSION.

Dr. Vida A. Latham.—I think all of us are familiar with Dr. William Hunter's paper on "Oral Sepsis," a paper which has done more towards uniting the medical and dental professions than any other paper ever written in the history of medicine. It is quoted all over the world, showing the great importance of oral sepsis. I would also like to call attention to that queer disease known as pernicious anæmia. There we get a most peculiar glossitis, a condition that is so characteristic as to be almost one of the diagnostic points in pernicious anæmia. We can get from the lymphatics of the tongue almost pure cultures of the streptococcus longus.

Dr. Talbot.—The essayist says that a perfectly healthy mouth will not emit odor, and speaks of decomposition of food about the teeth producing foul odors, etc. I do not entirely agree with those statements. The amount of food which collects about the roots of the teeth is very small, indeed, and I question the amount of odor therefrom. Again, the mouth may be healthy, but there may be odor from autointoxication due to indigestion or to the secretions locked up in the system. In cases of interstitial gingivitis or alveolar pyorrhœa we have the worst forms of odor. In a great many teeth which I have cracked open the odor was frightful, and yet the pulps were still alive. In cases of extreme absorption of the alveolar process with exposed tubuli the odor is also bad.

In the treatment, I must take exception to the use of a soft or wet brush. My experience is that there is not a brush made that is sufficiently stiff for my patients. In order to have a healthy mouth

we must have a gum massage brush. I am glad to hear the protest regarding the examination of the mouths of school children. I think the habit of examining the mouths of these children without thorough cleansing of the fingers is abominable.

Dr. M. L. Rhein.—Dr. Eames speaks of three minutes being advised for brushing the teeth. I insist that my patients shall give from four to five minutes to the brushing. I think the average patient will give about thirty seconds to this important matter, and I am accustomed to lay down a law to be rigorously observed. I agree with Dr. Talbot that the bristles of a brush cannot be too hard. I instruct my patients to use the flat sides on the gums as near the roots as possible in order to stimulate the capillaries of the gum tissue. Recession of the gums or necrosis of the tissues can be greatly improved if the tone of the tissues is kept up by proper massage. This point I especially emphasize in my instructions to assistants.

Dr. G. V. I. Brown, Milwaukee.—We all have our own ways of accomplishing the same results. The broader view of the paper is its significance in relation to the prophylactic feature. I want to correct what may appear in the print to be, as I am sure it was not intended, a protest against the examination of school children. Very little has grown out of these examinations, yet there is a work which ought to be looked after. I think many of the ills of their future lives could be avoided by proper attention to this examination. Matters pertaining to nose- and mouth-breathing and the general disinfection of the mouth are of the greatest importance. Much could be done in checking epidemics of diphtheria and of tuberculosis by insisting that a large vessel of water be placed at the door of the school-room and the children made to take a mouthful of water and hold it in their mouths for a few minutes. Whatever may be done with the sputum, the destruction of bacilli before they get into the air would be true prophylaxis.

Dr. A. E. Baldwin.—I believe practical results are to be obtained by anything that will properly cleanse the system and promote a healthy condition of the mouth. It seems to me it is hard to determine whether odors come from within or beyond the mouth. I think the fears regarding tuberculosis are carried to the extreme. I thoroughly believe that tuberculosis is a great scourge, and that all possible should be done to prevent it, but when it is realized that during the life of the human race it is estimated by careful

investigators that fully seventy per cent. of the people who attain adult life have sometimes during their life tubercular trouble and get well, the disease does not seem so hopeless as might at first be considered. I think care in the disposition of the sputa will bring the best results in preventing the spread of the disease. I am a thorough believer in cleanliness in any way it can be accomplished.

Dr. Eames (closing the discussion).—In regard to the healthy mouth not emitting a foul odor, I will admit that the mouth may be the outlet of an odor that may come from a distant part, but that distant part being seriously diseased, it is a question in my mind whether the mouth can still remain in a perfectly healthy condition. When I made that statement I considered it carefully.

The brush I leave to the discretion of the dentist. I said, dried, the brushes are sufficiently stiff. The idea was to make a distinction between the wet and the dry brush. I believe we can cleanse the teeth better with the wet brush if the bristles are sufficiently stiff. I see no harm in the use of the finger over the gums and it may help the puffy condition of gums as I have seen them. I practically leave the time for brushing the teeth to the patient. I say brush them thoroughly, and when you think you have done this, brush them one minute longer. I was careful, in making my reference to the school children's examinations, not to state how these were made. I think you would infer that they were not antiseptic. I did make emphatic the fact of the rights of parents of poor children in having the decision of who shall make these examinations.

Adjourned to Thursday, June 12, at two P.M.

(To be continued.)

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, April 22, 1902, the President, Dr. S. B. Luckie, in the chair.

A paper entitled "Stomatitis from a Dental Stand-Point" was read by Dr. David Genese, of Baltimore.

(For Dr. Genese's paper, see page 644.)

DISCUSSION.

Dr. James Truman.—I had an opportunity to-day of listening to Dr. Genese talk upon several topics, and to me they were profoundly interesting, especially his method of manipulation of plaster. It was an entire novelty to me, and in order to bring the method before the society I move that the regular order be changed, and that he be requested to proceed with the demonstration he has kindly promised to give.

Motion carried.

Dr. D. Genese.—The models which I have here were taken from impressions made with plaster in a way which I will show you, and without inconvenience to the patient. In mixing plaster for this work it is hardly necessary to soil the table.

The method is very simple. I use no water, but a preparation made from the gluten of rice. It is almost a syrup, but without any adhesiveness to it, yet it has a great affinity for the plaster and will take up a very large quantity, and enough is added so that it can be rolled in the hands like a piece of putty. There is no need for haste. When set it has a beautiful smooth surface, as though cast, and no air-bubbles remain in it. If the ordinary plaster is dropped into water, allowed to settle thoroughly, the excess of water poured off, and then a teaspoonful of this gluten is added, it will make the mixture smooth, and it will pour without any air-bubbles. It will remain plastic for some time, and when placed in the mouth and an impression taken it will not run off the tray, nor will the edges break away. It requires a little longer time to set than the ordinary plaster.

I use a preparation here to prevent plaster from adhering. It does not have to be colored. You can pass it over a plaster cast, pour the plaster on, and all that is necessary before separation is to put it in water. In taking a large cast of the face, I would apply some of this non-adhesive compound to the face and then put the plaster mixed in this way over the parts without fear of catching the hair or giving the slightest pain, and without breakage. I can put it all over the head and it will not adhere if the composition has been previously applied. There is no heat evolved in setting, as is the case with the ordinary plaster-and-water mixture. When it begins to set it is a little friable under pressure, and instead of keeping the imprint has a tendency to part a bit, which shows that it should not be further manipulated.

It is very difficult to add plaster to plaster. Plaster models get broken, and you cannot repair them with ordinary plaster. The moment the new plaster comes in contact with the old the moisture is absorbed, and afterwards the added portion will fall away. The glutenized plaster can be added to any part previously wet, and it does not move from its place when hard. If one happen to fracture a model, mix a little plaster as I have suggested, touch the two parts with the material, press them together, and wipe off the excess; then put on a warm stove, and in ten minutes the line of fracture cannot be recognized and the model will not again break in the same place. A suction disk may be made to adhere to a model with it, and it will occupy no appreciable space; yet it will go through vulcanization without detachment of the disk from the model. In vulcanizing with this plaster mixture it will undergo no change, and when a piece is vulcanized it will come away, and one can make another set on the model without any inconvenience.

(Replying to questions.)

The parting medium is a solidified glycerin made by the stearate process, is very simple, and it is now ready for the profession. A small portion is taken from the bottle and spread over the plaster with the finger-tip or a fine brush. It does not injure the model. I do not think salt would unite with the composition. It has a tendency to destroy in part the integrity of the plaster and to make it rotten when water touches it. It will always cause the plaster to absorb moisture. In this preparation moisture dries out, particularly with the aid of heat, and the union of the particles of plaster is exact. It can be subjected to considerable heat without injury. In case of fracture of an impression the pieces do not fall into such small fragments that you cannot pick them up and put them together.

The material is also useful for the reproduction of any works of art by electro-deposition. To copy a bronze figure is a very difficult matter in modelling, but if this is used for the mould and then boiled in paraffin it will take the deposit of copper as nicely as any material. I intended to bring you a figure of a dog that I did.

There is another method of modelling in copper that I do not think is known. The old copper amalgam is a precipitate of copper from a cupric sulphate solution by means of zinc sheets. This is amalgamated under a solution of sulphuric acid, then washed free of acid, dried, and packed into moulds to crystallize. If any of

you want to copy a statue, make a mould of it, pack it full of this copper amalgam, let it harden gradually, then heat it in a fire until the globules of mercury appear, and by the time it is heated to a red heat you will have an absolutely pure copper figure, and it is the hardest copper I have ever come across. The operation should be conducted under a chimney draught.

Dr. James Truman.—I would like to ask how the gluten is prepared?

Dr. Genese.—It is made from rice. The idea accidentally occurred to me while making rice capsules, which are soluble in water. In manipulating the rice I spoiled it, getting a liquid instead of a solid, and this I experimented with. Rice can be made so perfectly hard by manipulation that picture-frames can be made of it; in fact, anything that you care to mould. Professor Neal, of the University of Maryland, ordered a set of pelvic cavities from Tramond, of Paris, which arrived broken to pieces. While working on these, at Dr. Neal's request, I thought of the possibilities in glutenizing plaster. In dental work it is almost indispensable. You will see the value of it in this imprint of the ear, which ordinarily is troublesome to get. I have done three cases of compound fracture of the lower jaw within ten minutes for each, and in two cases out of the three the muscles had drawn the fractured parts out of line.

The President.—Discussion of Dr. Genese's paper is now in order. Dr. Kirk, will you open the discussion?

Dr. E. C. Kirk.—As the paper was being read I was impressed with the importance of the observation made by Dr. Genese as to the necessity for the correction of constipation in the first case that he reports. I think a great deal of light, in fact, the first real light that was thrown upon the etiology of stomatitis came to us in the shape of a paper read at the Third International Dental Congress by Dr. Loup, of Paris. His paper dealt with the rôle of mercury in the production of so-called mercurial stomatitis. Dr. Loup showed very conclusively that there was no such thing as mercurial stomatitis, properly speaking, and that the function of the mercury in all the cases where we have stomatitis is the production of a tissue intoxication, which at certain stages makes the mouth tissues vulnerable to the bacteria, which are its constant inhabitants. He proved that by increasing the dose of mercury a bactericidal effect was produced and the stomatitis relieved.

In Dr. Genese's case we have a set of conditions quite analogous.

In the first place, his case had been treated with morphine for neuralgia to the point where the bodily secretions were completely checked, and during the time this state existed there was undoubtedly an autointoxication from the absorption of intestinal waste products. In addition to that, mercurials having been given as a cholagogue and to evacuate the intestinal contents, there was a distinct poison given to the system, already saturated, so that infection was promoted by the depression of the vitality of the tissues. His treatment of the case was logical. The correct treatment after the evacuation of the intestinal tract by the use of glycerin suppositories is to follow up this medication with salts. He thus reduced the toxæmia and was enabled to take hold of the case, raising the standard of vital resistance to something like normal. It seems to me that this point is a very important one and worthy of consideration.

Dr. James Truman.—I do not exactly like the term “stomatitis.” We have all sorts of inflammations about the mouth, and nearly all of them go under that general head. The aphthæ of children and thrush have special names. Stomatitis is simply an inflammation of the mouth. There are different diseases that are separated, like leucoplakia, which has its origin in chronic irritation. Most of these cases that Dr. Genese has cited seem to me, as he described them, to be due to a gastro-intestinal disturbance. That agrees with my observation in cases of stomatitis as generally recognized by that name. There is one class of cases, however, of which I am in doubt as to whether it should be placed under that head or not. In these cases there is a partial hyperæmia of the mouth and an intense redness over a portion only of the mucous membrane. Perhaps some of those more familiar with the condition can explain it as due to an intestinal or gastric disturbance. If so, why should it not attack the entire mouth? I have seen a number of these cases in the University of Pennsylvania clinic. Of course, the paper deals with cases rather than general principles. Therefore, I do not propose to take up general principles outside of the paper.

The President.—Dr. Genese will close the discussion.

Dr. Genese.—Such a wide field is open for research in this condition, which we meet with daily in our practices, that nothing but absolute experience at the side of our patients or in the hospitals will give an idea of the number of the obscure reflexes. I was at the clinic at the University of Maryland and saw a remarkable

pathological specimen presented that had baffled both physicians and dentists for a long time, until it was decided, after a thorough examination by both practitioners, that an operation should be performed to remove a cause not clear to ordinary diagnostic means, though the abdominal wall was distended. A cyst was removed from the walls of the stomach containing a tooth that had evidently been there from embryo life and in a fully developed condition. So go on indefinitely the causes met with.

Dr. E. T. Darby.—They are not rare.

Dr. Genese.—It was the first case I came across, and contained a bicuspid tooth. The derangement of the system of the patient continued for several years. I think inquiry should be made of our patients when they present themselves looking as though unable to endure an operation, and that we should put ourselves on the safe side by declining to operate, in order to avoid shock when the patient is not in a condition to receive the attention given.

Dr. James Truman.—I move that the thanks of the Academy be given to Dr. Genese for his very interesting paper and demonstration.

Carried.

The President.—Dr. Genese has the thanks of the Academy.

Adjourned.

OTTO E. INGLIS, D.D.S.,
Editor Academy of Stomatology.

MASSACHUSETTS DENTAL SOCIETY.

THE thirty-eighth annual meeting of the Massachusetts Dental Society was held at Hotel Brunswick, Boston, Mass., June 4 and 5, 1902. The meeting was called to order by Vice-President Andrew J. Flanagan, of Springfield, Mass.

Vice-President Flanagan.—The next business in order on our programme is the annual address of our president. The address of the president may amount to much or little, according to the matter it contains. It has been my pleasure for several years to be a member of both the Northeastern Association and the Massachusetts Dental Society, and it seems to me that one need be only honest and straightforward and faithful in his attendance at these meetings, and he will hear something of vital interest and advantage. This

applies to every one of us, and I can say for the president of this society that in him we have had a faithful worker, one who has done what may be termed "scrub" work, and who has been an honor to our Society. I, therefore, esteem it an honor as well as a great pleasure to introduce to you the president, Dr. Frederick S. Faxon, of Brockton, Mass.

PRESIDENT'S ADDRESS.

"Expositions are the time-keepers of progress. They record the world's advancement, they stimulate the energy, enterprise, and intellect of the people, and quicken human genius. They open the mighty storehouses of information to the student.

"Every exposition, great or small, has helped to some onward step. Comparison of ideas is always educational, and as such instructs the brain and hand of man."

You will all probably recognize these as the words with which our late honored President McKinley opened his last speech, and where could they be more appropriately applied than in our own midst?

"Comparison of ideas is always educational, and as such instructs the brain and hand of man."

These last words answer in full, without argument, the question of that member of the dental profession who, when it is suggested he join a dental society, says, "Why should I? What do I get out of it?" But, dental brethren, in spite of the fact that this is the attitude of far too many in the profession, it is too narrow for us to dwell upon for a moment. At no time in the history of dentistry has there been more good words said in favor of our association at dental meetings than in the past two years, and this from the true representative men in the profession.

Only as late as April, 1902, in one of the good editorials written on this subject, it is stated "that it cannot be denied that the greatest achievements in dentistry have been usually given to the world by first announcement at a dental meeting." Therefore, it is but just to declare that it is the dental society which is the foundation and corner-stone of dental progress. It is truly said, "The church or nation is what the people in it make it." So with the State dental society, which represents the condition and standing of the profession in its respective State.

The State society is the one to mingle with the rest of the world, to represent the profession of the State in all dental matters in and

out of the State, to co-operate with other similar bodies in the general advancement of the profession, *not* for the benefit of the individual dentist particularly (although in no other manner can he get so much individual benefit), but for the benefit of humanity at large, the dentist included. He who is seeking happiness (a condition without limitation) by catering to his own selfish desires will be sadly disappointed by receiving in exchange only temporary pleasure, whose certain limitations too often end in disaster.

The purpose of the State society should be looked upon from a broader and nobler stand-point than that it holds a vaudeville entertainment once a year for the benefit of its members. It is the medium through which the dental progress of the world should come. It should stand for the elevation and advancement of the profession for the benefit of humanity.

There is a general desire to elevate and make more of our dental societies, but all are not agreed as to the methods to adopt. There is one vast movement forward in dental education, the progress in compatibility between the examiners and faculties, the unanimous extension of the college course, and one is becoming so dependent on the other as to take the attitude of a great combination, of which the State society is an important factor and cannot be dispensed with. In it should originate the different committees to look after legislation,—inspire good legislation and antagonize bad; something must be done to take the responsibility of prosecution from the general dentist. It should look after the oral hygiene of the State by examination of school-children's teeth. The State society should lead in the protection of the public from such institutions as St. Luke's Hospital. The grand movement going on in the Associated Charities with the aid of our valued and esteemed professional brother Dr. Hopkins, in dental attention to the poorer classes, should have emanated from the State society. No one dentist may take upon himself (for obvious reasons) the enlightenment of the public in regard to the care of the teeth so far as it concerns his profession, but an association of dentists in any community may, and ought to do so. The State society should hold the tiller of State board candidates and keep the standard at the proper elevation. This takes it out of any sect, class, or politics. It should lead in the important matter of interstate reciprocity. The proposed amendment to the Ohio dental law, providing that upon the unanimous vote of the State board, said board may excuse a licentiate

from some other State, being the best yet proposed, I would advise this Society to take action on it at this meeting. It should form district societies in places where interest is shown, and local societies are being formed for the self-same purpose.

I will not detain you longer on details, as my purpose is only to give an idea of the attitude and purpose of the State society. With a proper committee as a head and a good substantial fund to bind us together, so that we will not be living from hand to mouth, this work can be carried on to better advantage; there would be more interest, something tangible to work for. Our Society must assume an attitude in which we will take pride.

Mr. Lewis Nixon, a wise and able leader, says, "It is the duty of every young man to take an active part in politics, as much his duty as it is that he work for a living."

The people are the government, the conditions under which we live are entirely of our own making. Why not also apply this same idea to our State dental societies? The condition of dental matters is entirely of our own making, yet this is seemingly realized by only a few. To the extent that we are negligent, thoughtless, and selfish, is dental progress held back from attaining that position of which we, in our thinking moments, are justly proud.

There have been such beautiful words said to you, such splendid suggestions by former presidents, that there seems but little left for me; in fact, nothing can be added. I could only say them over again, depending on the power of repeated suggestion to change these good words into action for the benefit of all concerned. Because something did not explode when they were uttered does not mean they did not have their good effect; they took root somewhere. Ideas have been given us which, if carried out, would have developed us to a degree of perfection hard to realize. And still we are agitating the question of how to increase membership and interest in dental matters and dental progress generally. Now, to bring matters down to a local issue, which is the main object of this address.

Out of two hundred and twenty-seven towns and cities in the State of Massachusetts, only sixty-two are represented in this Society; in twelve cities of over ten thousand population, we cannot claim a member. Lowell, with upward of ninety thousand, sends us no representative, but has formed, in January, 1902, a local society, whose president is a member of the Northeastern District,

showing the presence of a spark of interest, which only needed a little fanning. This should be done by the State Society, and I have reason to believe would have been successful in this case in locating a district society. In Somerville it is the same, forming a local society February 10, 1902, for just the purposes State and district societies stand for. We have four members there out of twenty eligible dentists, two of whom are on the executive committee of the local society. Lynn has also formed a local society. Haven't they been waiting for the State Society to act? Occurring at this late date would suggest as much. Now, this work going on right under the nose of the State Society, so to speak, suggests that there is a desire for association among dentists, and that the attitude and purposes of the district society are not generally understood, and a clear and lucid explanation should be sent to every member of our Society. Since dividing the Society into districts in 1895, from a seeming loss of interest, two districts, the North and South Metropolitan, have joined, calling themselves the Metropolitan, absorbing the Northeastern; and the Southeastern District for a time was in an anæmic condition, but, by proper application of medicine, gained in vitality and is all right to-day, with a live membership of thirty-seven in good standing, ten being admitted last year. The Central District with no particular interest in local meetings should be admired for keeping its business in relation to the parent society so well up to the mark, only one member being in arrears for dues, fourteen young practitioners joining this year, full of enthusiasm for the fall campaign, so reported.

It is superfluous to say anything about the Valley District. It is all right, always has been all right, and every one knows it is all right. Eight new members have been elected the past year and one lost by resignation, and the State Society has lost one honorary member in this district. It contains ninety-seven per cent. of the eligible men in the district, and the State Society should be proud of this auxiliary. The Western District is in better shape to-day than ever. There is some trouble in collecting the dues, as the society has been neglected, with the result that several members got in arrears for large amounts, but the new treasurer feels that he can report a clean sheet in a short time. Here we see the value of an interested officer. It would not take one-tenth the interest and time that this laxity causes to properly care for affairs while in good condition.

There has been a renovation in the Western District, leaving twenty-three members in good standing; seven are suspended for arrears in dues, one removal from town, and death has claimed one. What we need is a fan kept in the State Society in the shape of a committee as a head to all details, to see that no flame gets so low as to flicker.

The Metropolitan District from a financial stand-point is our great hold. Its business department stands at the head. It has officers who take pride in attending to their duty, and in detail its affairs are kept up to the mark. It has a membership list of nearly two hundred in good standing, and in comparison with last year's list in the programme shows the addition of thirty new members. So far as its direct bearing on the parent society is concerned, it deserves honorable mention. It holds interesting and well conducted meetings, but as a district society it is a failure in this respect; the district covers too much territory; less than one-third of its members ever attend the meetings, and in all probability the majority do not realize that they belong to anything but the State Society.

The Metropolitan should be subdivided, after due thought as to the best method, aided by experience.

In dividing the State Society in 1895 the correct method was pursued, paying attention to railroad conveniences; but as we see the interest spring up in different cities for the self-same purpose we represent, and where districts were previously, would not the proper attention make them our district societies? There are reasons for believing this.

The importance of good secretary work is shown when you wish to look up any particular proceedings at a particular meeting, change in by-laws, etc. This has been proved in the last year.

The importance of a good treasurer is shown by the lax condition into which the Northeastern, Southeastern, North Metropolitan, and Western Districts were allowed to drop, and the manner in which the Central District and the superfluous part of the Metropolitan Districts are held together and bound to the parent society without any seeming social interest. In some districts the secretary must bear his share of criticism. Now, when I am speaking of inattention to business, laxity of interest by officers, etc., please do not interpret me as taking a pessimistic view of matters and conditions, for nothing is farther from my intention. We were never in better

condition, nor has the outlook ever been brighter. It is my intention to deal with fact rather than sentiment. I desire at all times to be suggestive rather than positive or conclusive.

I wish to convey the idea that the progress and success of the society depends mainly on the interest and faithfulness of its officers. There *must* be *three* live men in each district society,—secretary, treasurer, and chairman of the executive committee, and in any district where you cannot get these you can be absolutely certain of a withered limb of the society. An interested officer will, as the year goes by, see many ways by which the details of the society work can be improved; things suggest themselves at times which, if jotted down, can be brought up at the right moment with much benefit. This in detail is what constitutes interest,—a little thought outside of routine work.

These conditions are alluded to principally to show the danger present of going back to former conditions, and where the State Society would have but one district,—the Metropolitan,—or, in fact, be where it was in 1894 before the division. In 1894 the Society numbered about one hundred active members, increasing in 1901 to three hundred, and to-day we have a membership list of three hundred and sixty in good standing.

Do not let us undo the hard and valuable work done in 1895 by the able officers in dividing the Society into districts. *No*, members of the Massachusetts Dental Society, do not let the districts be wiped out. The interest is there more than ever to-day, but they must have a head, and the machinery must be oiled to run smoothly, and there will be no trouble with the existing plan.

No corporation, institution, business, or society can run successfully without proper attention to business details. The department store principle is correct; if the head of a department is not attending to it properly, he is dismissed as a bad link in the chain; the district society is one of the departments of the whole, and a committee should be chosen as a head to the whole business to keep run of affairs. This is what the president is supposed to do, but I do not believe there are exceptions enough among us who would or could give time to attend to this,—certainly not without help. There should be a head to the districts to keep them up to the mark, composed of men who have the interest and welfare of the whole Society at heart. The officers must feel there is some one to be responsible to, some one to criticise if matters are not attended to.

This will be an inspiration for those who hold the positions to fill them faithfully. The committee spoken of, adding the suggestion of starting the fund previously mentioned, would, it seems to me, give a substantial foundation to our organization which would bind us together more firmly.

This committee should see that district officers are doing their duty according to the By-Laws, and guard against any lack of interest that will interfere with State Society affairs, and should be chosen for their ability and interest to attend to these matters; not as severe a task as supposed on first thought, but simply a matter of attending to it. This committee's work is best performed when it has nothing to do, showing a good condition of affairs.

Article III., Section 6, of the State Constitution and By-Laws says that the "District Treasurer shall send a report approved by the Board of Censors of his society of receipts and disbursements during the year, also showing financial condition of said society. In case the District Treasurer shall neglect to make his return as herein provided, he shall be liable to be proceeded against according to law for the whole amount of assessments charged to him on his list."

Was this put in for a purpose, or simply for the sake of saying something? I am willing to give the officers who drew up this section the credit of having the intelligence of knowing what they were doing, and I have a great deal of respect for their ability, and believe it was meant for just what it says. But who is there to proceed against a district treasurer if he does not turn in dues for all members? No one. You will say it is the president's duty. Had this been realized, the lax condition of districts in the past few years would not have occurred, and that is just why we should have this committee with authority. There has been some question as to whether it means that a district treasurer is responsible for just what dues he collects, or for dues of all members collected or not. It is for all members, and it is correct, unreasonable as it seems at first thought.

Article II., Section 2, of the District By-Laws says, "The name of any member who may be in arrears for two years shall, upon vote of the society, be stricken from the roll of membership," and so on.

Now, if the district treasurer attended to his duty according to the By-Laws (and it is a discredit to himself and the society if he

accepts the position and does not), there would be no delinquent members for him to be responsible for, only for dues collected. The By-Laws are not only fair, but sensible, as they make a treasurer responsible not only for that money in his possession, but push him to collect or report for action if the society demands it.

The district society is not an independent society, as many have the idea; it is as much a part of the whole as a table leg is a part of the table. It is not obliged to have any dues aside from the State Society. It has a treasurer to collect annual dues of two dollars for the Massachusetts Dental Society; officers called a Board of Censors, to attend to the membership list, investigating the character of applicants, etc.; and a secretary for the usual duties. They must hold a meeting at least twice a year, at which the five officers may constitute a quorum. It is supposed that the districts will hold meetings for social advancement, the reading of essays, clinics, and to increase the interest more generally throughout the State than under the old conditions; this was one of the objects of the division, but not mandatory by constitution, but optional with the members in the district. The fact that they do not do this does not make the society defunct. Therefore, the whole cause of any district society's becoming defunct, as some erroneously say, lies with the district officers, treasurer *principally*, in not collecting dues or reporting delinquents to be acted on; with the executive committee and secretary next; and also the members not understanding the attitude of the district society,—that it is the door through which they must pass to be a member of the Massachusetts Dental Society. Too much dependence has been placed on the district societies being independent societies, with the idea that if they lacked interest in the social side, all must be dropped. The district society is not an independent society, but part of the combination, and a screw loose in one affects the whole. All *officers* should realize this if all members do not. Investigation reveals the fact that what we term delinquents, with exceptions too few to notice, are not in arrears from any intentional neglect on their part, or lack of interest in our State Society work. Their willing and ready response to a proper appeal even to an amount approaching an unnecessary hardship shows that the members of the Massachusetts Dental Society are men of character, and with an interest sufficient to inspire an interested officer and to warrant success in our work as a State society.

Now, if my words savor of pessimism, it is far from my intention. Our State Society is most certainly on the upward trend. Part of the duties of a State society previously mentioned have already been adopted by us, but there is a missing link in the chain, or a weak one which needs strengthening. The correct listing of members in good standing with details this last year is a grand work for the Society, as it places the members where they can be approached when needed for the advancement and carrying on of the Society's work, and the one who carried it through deserves great credit.

The steady progress in society work throughout the country and the increase in membership shows that a better educated class is constantly coming among us. As dentists are developing in education, they are craving association. One-fifth of the profession is engaged in society work; to-day there are over one hundred society organizations and more interest in society work than ever. The country is overflowing with the young practitioner eager for association, whose interest needs but a tickling with the smallest feather to make him one of us. But let us beware that the standard and interest in our association when he does join is not disappointing.

Vice-President Flanagan.—The president's address is now before you for discussion.

DISCUSSION.

Dr. J. T. Paul.—There is one article which pleased me as much as anything, and that is the report of the return of the district treasurers. I am supposed to know every member in the Society. If the district treasurer does not make a return, I do not see how I am to know that. A recent vote of the Society reads thus: "must keep a correct list of the district society's members, recording each member's indebtedness to the society." I received last fall, ten days before the fall meeting, reports of the treasurer, giving amounts of the individual indebtedness of each member of the district society. You can see from these lists I have here how well that has been carried out. The Metropolitan reports one hundred and ninety-one, but in not one of them have I received the full amount. They make their returns and include in them some of the arrearages. The South District comes in with thirty-seven, but they have made the same return, and several of them are two and three years in arrears. The Central District is behind on thirty-five members. The Valley District has a membership of fifty-five, but has made return for

twenty-seven and one-half. The Western District reports a membership of twenty-three, but has made no return whatever. I have been told since I came here that the treasurer gave his check and report to another member, and he came away and forgot it. Now, if I am to have these lists correct, it would be well, when the district treasurers are sending funds to me, to send me a list of members whose yearly dues are paid. This will be of great assistance to me, and without it I can do nothing. The president has read Article III., Section 6, of the Constitution. I would like the treasurers, when they send money, to also send a list of the members for whom the money pays and for what dues. Last year I received from some of the treasurers only a note stating that paid for this year and last year. This year I received some who have paid up to the annual meeting of 1902. It seems to me that this part of the president's address should be brought especially before your attention, and see that the district treasurers look out for themselves, and I will look out for my own part of the work.

Dr. George A. Maxfield.—I want to commend the president's address. It shows that he has studied carefully into the condition of affairs and has presented them in an excellent light before us. It also sets a mark for the incoming president to attain to. In the past there has been serious criticism, with some grounds for it, on the addresses of some of the presidents. The greatest thing that troubles me is the lack of business methods throughout the whole State. This association is a chartered organization. We have a constitution and by-laws, and these should be lived up to to the very letter. It is only thus, as we see the needs and requirements, that they can be maintained and brought to a better working basis. The president has recommended that a board of councillors be appointed. I think this an excellent idea. It is but right that the treasurers should make reports, and as the dues from each member are legal debts, they should be collected, but it should be done in a more business-like method than it has been done in the past. I hope these recommendations of the president will be adopted.

Dr. J. T. Paul.—I omitted to say, coming back to that article, the treasurer is supposed to make a report in connection with his funds. Now, this year I have received none whatever except from the Metropolitan Society. I know nothing whatever of the condition of any of the districts except the Metropolitan.

Dr. J. K. Knight.—I would like to inquire who has the right to

terminate membership in the State Society? Whether the State Society or the district society has that right.

Vice-President Flanagan.—I would ask the president to answer that question.

President Faxon.—I will answer that question for Dr. Knight because I expected it to come up at this meeting. If I understand your question at all, it is in regard to the making and unmaking of members. As I said before, I expected the question to come up here, and so I got advice on it. All active members of this Society are made and unmade in the district societies; the dues are all paid there, and the district society has the whole power to make and unmake the members.

Dr. J. K. Knight.—One further question: Can that membership in the State Society be terminated on different grounds, or must the reasons be uniform?

President Faxon.—Each district society is privileged to make its own by-laws where they do not conflict with the constitution and by-laws of the State Society. If there is any by-law in regard to membership which conflicts with the by-laws of the State Society, then there is a chance for your argument. If there is *not*, they are all supposed to be the same. If there has been any amendment, anything of that nature, brought before the district society, I know nothing of it.

Dr. J. K. Knight.—This is the point I want to bring out. I do not think that any of us want that one district society should set up a limit for the termination of membership which does not exist in the other district societies. The thing should be made uniform. Members coming into the district societies have certain legal rights. I do not believe that one district society has the right to terminate membership for non-payment of dues after three or six months while another district society allows its members two years. That is the point.

President Faxon.—I know of nothing which gives one district the privilege over another in regard to the termination of membership. I would rule that all district societies are alike, unless there has been some amendment.

Dr. J. K. Knight.—If you will call for the records of the Metropolitan District, you will find that membership is terminated in six months, while the other districts have two years. It seems to me a little unjust. Many of the older members come only to the annual

meeting, and if they are to be dropped out in six months' time, many of these older and valuable members will be dropped and you will lose them.

President Faxon.—That is an amendment of the district by-laws. How does that interfere with the State Society's by-laws?

Dr. J. W. Bailey.—The gentleman refers to the amendment to the constitution of the Metropolitan District which was passed at our annual meeting. At that time a point of order was raised that the vote was illegal, but the chairman ruled that that society, and each society, was a law unto itself, and that there is nothing in the State Society's constitution which says that a district society shall not make its own laws in that respect, and it is absurd, with all respect to my friend here, to give any society the privilege of making members and not give that society the privilege of un-making memberships. We are all citizens of the United States, not less so, no matter where we live. In regard to losing valuable members, I do not believe we will lose any valuable members by shortening the time. We did drop one valuable member, but he has come back, and I think we have all had a valuable lesson. I contend, Mr. President, that the Metropolitan Society has a legal right to pass any laws, by-laws, or amendments to the by-laws, just so far as they do not conflict with the constitution and by-laws of the State Society. Each society is a law unto itself. I think any lawyer will tell you that is right.

Vice-President Flanagan.—Gentlemen, is there any further discussion on this paper? If not, I am going to overstep my bounds a little bit and say that it is really a necessity that some action be taken. I am, therefore, going to ask that some member recommend that a committee be appointed for the consideration of the President's Address. I therefore ask that some member move this.

Dr. G. A. Maxfield.—I move that a committee of three be appointed to consider the President's Address and report at the next meeting of the Councillors.

Motion seconded.

Vice-President Flanagan.—Gentlemen, you have heard the motion. Is there anything to be said on the question?

Dr. R. R. Andrews.—I want to inquire if this means that we shall have a report from that committee during the present session?

Vice-President Flanagan.—It will come up under "unfinished business."

Motion put and carried.

Vice-President Flanagan.—I will appoint Dr. Maxfield, of the Valley District, Dr. Paul, of the Metropolitan District, and Dr. McLaughlin, of the Western District.

(To be continued.)

Editorial.

THE SECOND YEAR OF THE CENTURY.

WITH the present month the second year of the century will have passed into history. It has been an active year in the greater world, and the social strata has been stirred, in all probability, as never before during a similar period. The contest between labor and capital has reached the acute stage both in this country and Europe, and from present indications concentrated wealth will be forced to recognize the producer, the man of toil, not as a beast of burden, but as a man with all the possibilities that the word implies. If this second year of the century could show nothing more than this, it would be sufficient to dignify it as the most important year in the progress of humanity towards a broader conception of the true standard of justice between man and man.

While all must be interested in the economic whirl through which so many are now passing, the mind of the specialist must necessarily be drawn away from the unrest of the world to that which has been of more intimate interest and value to his work.

The past year has left no important note of progress for the average dentist to build upon. In summing up his gains and losses for the year he will not be able to place to the credit of his profession any marked advance. There has been nothing specially new presented. Able papers have been produced, some of them foreshadowing a bright era of positive knowledge, and we must rest content until that period arrives. While this is true, we should certainly be wiser for the twelve months' experience. This may not seem encouraging, but progress is not counted by months or years. The evolution of an idea may be instantaneous, but more

often it develops so slowly that men forget when or how it was first originated, or what were the forces that brought it to perfection.

While dentistry has not marked any decided growth in twelve months, it has not been inactive. The various local, State, and national conventions have been held, and have been attended by an interested body of men. The international feature has been fully represented at Stockholm, Sweden, by the International Dental Federation, and the preparations for an International Dental Congress has been actively prosecuted by the committee appointed by the National Dental Association. The result of this committee's work is at present somewhat in the dark. Obstacles not thought of when the proposition was made at Niagara Falls to hold such a congress have arisen with the possibility of forcing its abandonment altogether. It is hoped that wise councils may prevail and this country may not again be discredited by professional jealousies and by forceful attempts to override all the proprieties which are part of our national professional well-being.

The necrology of the past year includes many valuable workers. The silent reaper is gradually ingathering the men who have borne their share of the professional burden. Let us remember that these have in their day and generation helped to make dentistry worthy of our own self-respect, and have taught us that the world honors those only who walk truly in the pathway that leads, morally and professionally, to the highest.

INTERNATIONAL DENTAL CONGRESS.

THE committee having this matter in charge has been actively at work endeavoring to bring order out of a chaotic condition of things.

The committee appointed by the *Fédération Dentaire Internationale* to take charge of its interests in this country in connection with the congress is still persistent in claiming precedence in the matter, allusion to which was made in our last issue.

It seems, from correspondence, that at the Third International Dental Congress, held in Paris, 1900, the Executive Council of the *Fédération Dentaire Internationale* was by resolution "intrusted with the organization and preparation of the next congress."

The International Dental Congress held at Chicago, 1893, was called by the united action of the American Dental Association and the Southern Dental Association. When it closed its labors we are not aware that it delegated authority to any body to call another congress.

When the call was issued for the International Dental Congress to be held in Paris no allusion was made to any previous authority to issue said call, nor was there any necessity for it. These International Dental Congresses have heretofore been held during the period of certain great expositions, and, therefore, any definite time for the holding is entirely out of the question.

In view of these uncertain periods, it seems proper that the country in which the exposition is held should have the entire management of the congress. This has, heretofore, been the case, and this departure from established usage is not at all in accordance with international comity.

A congress has, without doubt, the right to delegate the power to any body to call together any subsequent congress, but it is equally the privilege of any nationality to decline or accept such authority. The *Fédération Dentaire Internationale* is a body of dental educators from various sections of the civilized world, While men of broad intelligence, it does not seem that this is exactly the organization to manage an international congress.

The proposed congress of 1904 was ordered by the National Dental Association at its meeting at Niagara Falls, 1902, and in its invitation to the *Fédération* it expected and desired that it should work conjointly with it to make the congress a success, but the members were not aware of the aforesaid resolution empowering the *Fédération* to call and manage the congress. Dr. Godon, president of the *Fédération Dentaire Internationale*, has apparently the correct idea, for he says, "It seems to us that the committee of nine should hold a meeting, appoint officers (President, Vice-Presidents, and Secretaries), and the committee thus formed should put itself in relation with the several societies that addressed the invitations, so as to *collaborate* to the good organization of the congress and will place itself at the disposition of the organizers." If this is carried out by the committee all further trouble will be avoided, but its present attitude, if persisted in, will not only injure the prosperity of the congress, but will create antagonistic feelings that years may fail to remove. The true

solution of this whole matter is to avoid all interference by other nationalities with the management of a congress, no matter where held, leaving it entirely with those most familiar with local conditions and national peculiarities.

NEWSPAPER ENTERPRISE.

THE *Buffalo Express*, on Tuesday, October 14, presented its readers with an interview with Dr. Florestan Aguilar, of Madrid, Spain, a "dentist of international fame," who "has been in this city for a few days, the guest of Dr. William C. Barrett, of the University of Buffalo."

The article is introduced by a history of Dr. Aguilar and his work and the honors bestowed upon him in Spain, and then it gives the doctor an opportunity to tell what he knew of the feeling of his people in regard to the Spanish-American war.

"You won the battle of arms," said he, "but we won the diplomatic battle, and had the best of the bargain. You paid us \$20,000,000 for the Philippines. They were of no use to us. . . . As for Cuba, its loss, while humiliating to our national pride, has been really a benefit to us, for there was no revenue from it that could compensate for the annoyance. . . . Spaniards who settled in that country have, since its loss, returned to Spain and brought with them the fortunes accumulated there. . . . Hence my country is resigned," etc. Thus through a column this interview continues. And it is unnecessary to add that it created marked comment from the press of New York State.

The most remarkable part of this extraordinary interview was, however, omitted, and that was that Dr. Aguilar left Buffalo for his return passage September 27, just eighteen days prior to the time that the interview took place, October 14, and on October 10 he was in Paris attending the Executive Council of the Fédération Dentaire Internationale, and made his report to that body of his mission to the United States with which he had been intrusted.

That this interview is full of interest there can be no question, and were it not for the slight mixing up of dates it would be entirely satisfactory, even to Dr. Aguilar, as it, doubtless, represents his views on the Spanish-American War, but while this is

true, there is always a certain number of curious people who would like to know how such an interview was procured, whether by cable, wireless telegraphy, telepathy, or whether it is a new effort on the part of the daily press to convey truth in the form of a novelette. In view of all the facts, it will certainly be entertaining reading for Dr. Aguilar in his far-away Madrid home, and will give him some idea of the perfection to which interviewing has been reached in the United States.

EXPLANATION AND APOLOGY.

THE serious illness of the editor through several weeks has made the preparation of the present number somewhat difficult. Our readers and correspondents will, therefore, kindly overlook all defects and delays in noticing their communications. All matter requiring the editor's special care, such as illustrated papers and book reviews, are necessarily held until he is able to resume his duties.

Domestic Correspondence.

BOSTON LETTER.

TO THE EDITOR:

SIR,—Vacations are over and the fall work has begun in earnest. Every one appears in excellent spirits after their well-earned rest. Many of our friends have taken long and delightful trips. Dr. Julius Werner spent the summer in Europe, Dr. Clapp was at his Maine camp for a long stay, others have had equally pleasant times, and generally most every one has given up some time to the study of geography and tried to forget all about where they came from.

The Harvard Odontological Society held its first meeting after the summer vacation at Young's Hotel, September 25. For some years its meetings have been held at that popular hostelry, but now owing to various changes the club will no longer meet there, its next meeting being booked for the Hotel Westminster.

The speaker of the evening was Dr. Clarence B. Vaughan, who read a paper on the bleaching of teeth. Dr. Vaughan covered the ground carefully but concisely, and his paper and the discussion which followed were of great value.

Dr. H. H. Stoddard showed a system of porcelain inlays as advocated by Dr. Peck, and passed about many samples of the work and also Dr. Peck's book and system.

The meeting adjourned at ten P.M., with expressions of satisfaction and good fellowship from all sides. A number of the men have been to the State dental meeting at Worcester this week, and report that it was one of the best ever held.

The Harvard Dental School is also in full swing. The number of men entering is smaller than usual, owing to the increased severity of the examinations, but it can be seen at a glance how much this has raised the standard of the school. The men are older and appear much more in earnest than ever. They promise well for the future of dentistry.

HUB.

BANQUET IN HONOR OF DR. S. B. PALMER, OF SYRACUSE, N. Y.

NEW YORK CITY, October 27, 1902.

TO THE EDITOR:

SIR,—Nothing that we have attended in many a day has been more enjoyable than that of a party of some thirty-five who sought to do honor to one of our most worthy members, Dr. S. B. Palmer, of Syracuse. The table was set at the palatial New York Athletic Club, and this with abundant satisfaction. Planked shad figured bountifully and enticingly. Everything was in the simplest form, and presided over by Dr. A. H. Brockway, who of himself is pure and simple. The list of speakers speaks for itself. Everything breathed a tender and truth-saying regard for our guest. Nothing spectacular save the speech of Dr. Parmly Brown, son of the noted late Salymon Brown. He did not play leap-frog, but he did—the frog in his throat, so much so it was whispered to us he has coming on a case of vocal paralysis; but to the astonishment of all, he, by a strangulating cough, brought out (or seemed to) a veritable live dangling bull-frog from his mouth. Did it create a guffaw? Of

course it did; this ending by a dramatic production of Shakespeare in marked effect, and closing with a beautiful poem by his father, nicely given. One speaker referred to another gathering of dentists that had sought to crown a Prince of Siam that eve, at the Lotus Club, but *we* were crowning a *real* prince among our own craft.

Reference was made, by way of illustration, to the keen disappointment of the late Dr. Atkinson's visit to Europe, he not receiving the attentive appreciation that he thought due, as he told a friend that they dined him and wined him, and after that they had no more use for him (Dr. Atkinson did not see that they were following "the customs of the country"). Not so is it to be with Dr. Palmer; we hope to use him until the end of his career. Drs. Brockway, Curtis, and Hodson, all formerly of Syracuse, vied with each other for a tender and emphatic expression of good-will for the doctor. He had been in their early days truly, if not a "cherishing mother," certainly a "cherishing father," to Dr. Curtis a means of the possibility of his larger education, which has notably brought to him a high position in his surgical department, which will not fail to do honor to him later. To Dr. Curtis is most largely due this delightful pastime and fraternal intercourse in the ripening days of our friend and co-worker.

We cannot fail to notice with tender regard one of the letters of choice wording from our greatly appreciated co-laborer, Professor Truman, informing us of his severe sickness, preventing his anticipated part in doing honor to Dr. Palmer, for whom he expressed his decided friendship and appreciation. Much solicitation was manifested for our worthy editor and friend and co-laborer, trusting that he may have a speedy return to his accustomed health. Dr. Truman sent the following sentiment:

"This above all: to thine own self be true, . . .
Thou canst not then be false to any man."

"The man who selfishly regards himself as superior to all others will drive all others from his realm of thought. We honor Dr. Palmer because he exemplifies in his own person consistent ideals, unselfish devotion to principles, as he understood them, leaving the final solution of the problem he sought to cover to the infallible test of time."

Dr. Kingsley referred to the fact that out of forty "Patriarchs" that were given a banquet some twelve years ago, they having passed

their fiftieth year of practice, only two of them were now living,—Drs. John B. Rich, now nearly ninety-two years old, and William B. Hurd, eighty-three, the latter having held a reception that afternoon, bringing together, as he expressed it amusingly, the greatest gathering of antiquated bric-à-brac he had ever met, one of them an even one hundred years old. It was expressed as quite a marvel to note with what vigor of voice Dr. Rich spoke in regard to Dr. Palmer. Even at his age he is actively conducting successfully a School of Physical Culture, being a lifelong expert in this connection, which doubtless has much to do with his longevity. A number of dentists have been and are being largely benefited by this culture.

Dr. Palmer announced in his closing remarks a *prediction*,—viz., there is to be a *new* physiology taught that will be an astonishment to the scientific world. Following this, Dr. Palmer gave an outline of his views in this connection, which we give as he has put it into shape for publication, and we predict it will be read with much interest and curiosity.¹ Should this prediction ultimately prove a fact, this dinner-party will be recalled as an eventful one in history. All honor and longer life to our esteemed co-laborer, Dr. Palmer.

G. ALDEN MILLS.

Miscellany.

COLLAPSED WHILE EXTRACTING UNDER CHLOROFORM.—On Saturday, the 5th inst., about 7.30 P.M., a woman and her husband called at my office. The woman was suffering severely from toothache, and had been for some days. On examining the mouth I found the whole upper denture more or less decayed, and some eight of the lower ones also, the pain being caused principally by a lower bicuspid and third molar. I advised the removal of the aching ones, and let the others remain for the present. But the lady, having suffered severely during extraction before, stated that she wanted chloroform, and would have all the decayed ones out at the one time. I sent her to her physician for examination, saying that if she was a fit subject I was satisfied. She was pro-

¹ For Dr. Palmer's paper, see page 897.

nounced a good subject by her physician, and the chloroform was administered by him at 11.30 A.M. the following day. She took the anæsthetic well, everything being apparently satisfactory, and in about ten minutes was completely under the anæsthetic. I started to operate, and had removed thirteen teeth when the collapse occurred, and breathing ceased. Efforts were at once begun to revive her, artificial respiration, hypodermic injections of strychnine and nitroglycerin, also brandy, etc., being used, but without any result whatever, and after about an hour's work abandoned, as the case was hopeless. A coroner's inquest was held next day, the verdict being that the deceased came to her death during the administration of chloroform for the extraction of teeth, through paralysis of the respiratory centre, and that no blame was to be attached to any parties connected with operation.—W. J. HILL, Ontario, *Dominion Dental Journal*.

Current News.

INSTITUTE OF DENTAL PEDAGOGICS: TENTH ANNIVERSARY.

THE tenth annual meeting of the Institute of Dental Pedagogy will be held in Chicago, December 29, 30, and 31, 1902, at the Palmer House. All who are interested in Dental Education are cordially invited to attend. The following programme has been arranged:

PAPERS.

- "Teaching Operative Procedure," Dr. C. N. Johnson.
- "Teaching General Anatomy to Dental Students," Dr. Borland.
- "Teaching Electricity and its Dental Uses," Dr. W. A. Price.
- "Teaching Embryology," Dr. I. N. Broomell.
- "Teaching Applied Physics," Dr. G. V. Black.
- "Physical Diagnosis."

A Symposium on the "Management of the Teaching of Demonstrators in the Infirmary," by four professors.

Report of Committee on "Four-year Curriculum."

Report of Committee on "Nomenclature."

All new teaching appliances must be submitted to Dr. Whittlar, of Cleveland, or to Dr. Patterson, of Kansas City.

HART J. GOSLEE,
President.

W. EARL WILLMOT,
Chairman Executive Board.

H. B. TILESTON,
Secretary and Treasurer.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

THE Pennsylvania Association of Dental Surgeons held its fifty-sixth annual meeting on the evening of October 14, 1902, at the Continental Hotel, Philadelphia. The following officers were elected to serve during the ensuing year:

President, Dr. Wilbur F. Litch; Vice-President, Dr. Geo. W. Cupit; Secretary, Dr. J. Clarence Salvas; Treasurer and Librarian, Dr. Wm. H. Trueman.

During the past year the following papers were read and discussed before the Society: "Combination Fillings," by Dr. Joseph Head; "Obtundents," by Dr. Chas. S. Moore; "The Difference in Method of High- and Low-Fusing Porcelain for filling Teeth," by Dr. W. A. Capon; "A Practical View of the Plastics," by Dr. J. Clarence Salvas; "Alveolar Abscess: Its Complications and Treatment," by Dr. J. F. Wessels; "The Danger of Infection of the Eye of the Dentist while operating," by Wendal Reber, M.D.; "Calcification of the Dentine and Enamel and its Relation to Hypersensitiveness of these Tissues," by Dr. I. N. Broomell; "Adenoids and their Relation to Oral Deformity," by Dr. M. I. Schamberg; "A Sketch of Edward Hudson," by Dr. Wm. H. Trueman; "General and Local Anæsthesia, with Special Reference to its Application in Operations within the Mouth," by Dr. E. Quin Thornton, M.D.

J. CLARENCE SALVAS,
Secretary.

INDEX TO VOLUME XXIII.

A.

A.B. or M.D., which shall it be?
485

Abscesses, antral, amputation of the
palatal roots of the superior first
molar for the prevention of, 784

Academy of Stomatology, 245, 508,
590, 668, 763, 833, 927

Actinomycosis, 169

Address, a brief, 909

Adenoids in relation to structural
changes, 393

Advertising, burlesque, as a means
of exposing fakirs, 617

Air, treatment of pulmonary com-
plaints with, from limestone
caves, 865

Allan, Charles F., what should be
the relation of our govern-
ment to the dental profes-
sion? 149

George S., extension for preven-
tion, 311

Alloy, process for producing gold-
like, from copper and antimony,
538

Aluminum for dental plates, 801

Alumni Association, New York Col-
lege of Dentistry, 297

Amalgam, precipitated silver to
hasten the setting of, 291

American Academy of Dental
Science, 33, 187, 358, 596,
653, 821

Dental Society of Europe, 457,
543

Medical Association, Section on
Stomatology, 354, 385, 390,
769

Society of Orthodontists, 300,
778, 858

Amputation of the palatal roots
of superior first molars for the
prevention of antral abscesses,
784

Anæmia, pernicious, caused by oral
sepsis, 699

Anæsthesia, nitrogen monoxide in
combination with oxygen for,
387

local, by high-frequency electri-
cal currents, 698

of the teeth by means of high-
frequency currents, 651

Anæsthetic, a new, somnoform, 747

Anæsthetics, suggestion in the ad-
ministration of, 293

Anderson, Martha, some notes con-
cerning preparation of teeth for
microscopic study, 588

Andrews, R. R., the embryology of
the dental pulp, 621

Antimony and copper, process of
producing gold-like alloy from,
538

Army, a bill to reorganize the corps
of dental surgeons attached
to the medical department of,
456

dentists, the, 221

Arrington, B. F., dentistry as a vo-
cation for profit, especially in
North Carolina, 239

inconsistent and misleading ex-
pressions, 490

Arsenical poisoning cured by ortho-
form, 295

Attachment, concealed bicuspid, for
bridge, 538

concealed gold bridge, 144

Award of the Gross prize of one
thousand dollars, 222

B.

- Babylonians, Chaldeans and, metallurgical skill of, 865
- Backings, an original method of adapting to facings, 698
- Bacteria on Mont Blanc, 696
the action of liquid air upon, 696
- Baker, L. W., facial and dental harmony, 69
- Bands, how to splice engine, 618
- Banquet in honor of Dr. S. B. Palmer, of Syracuse, N. Y., 950
- Barry, Dr. Burt, in memoriam, 282
- Beads, use of, in retaining rubber dam, 866
- BIBLIOGRAPHY:**
- Abbott's Bacteriology, A Practical Manual for Students and Physicians. By A. C. Abbott, 528
- Anatomy, Descriptive and Surgical. By Henry Gray, 142
- Notes on Materia Medica, Pharmacology, and Therapeutics, for Dental Students and Practitioners. By Douglas Gabell, 530
- Principles and Practice of Operative Dentistry. By John Sayre Marshall, 224
- Questions and Answers. By Ferdinand J. S. Gorgas, 225
- Quiz Compend on Irregularities of the Teeth. By Eugene S. Talbot, 280
- Simon's Manual of Chemistry. By W. Simon, 59
- Studies of the Internal Anatomy of the Face. By M. H. Cryer, 140
- The Röntgen Rays in Medicine and Surgery, as an Aid in Diagnosis and as a Therapeutic Agent. By Francis H. Williams, 276
- Billeter's, Professor, report on dental education, 134

- Bill to add a corps of dental surgeons to the bureau of medicine and surgery of the navy, 456
to reorganize the corps of dental surgeons attached to the medical department of the army, 456
- Bills before the Senate, Fifty-seventh Congress, 455
- BIOGRAPHICAL SKETCHES:**
- Dr. Benjamin Lord, 531
- Edward Hudson, 441
- Royal William Varney, 284
- Board of Dental Examiners in Pennsylvania, 296, 868
- Bogue, E. A., observations on some recent cases of orthodontia, 869
- Boston letter, 693, 949
- Bradley, Frederick, foreign observations, 15
- Bridge, concealed bicuspid attachment for, 538
- Briggs, E. C., porcelain inlays, 630
- British Dental Association and the National Dental Association of the United States contrasted, 745
- Broaches, Swiss, to produce spring temper in, 777
- Brown, George V. I., general nervous manifestations in relation to jaws and teeth, 571
surgical correction of malformation and speech defects due to or associated with harelip or cleft palate, 301

C.

- Capsule implantations, 372
- Carroll, N. G., professional honesty and decision of character in the practice of dentistry, 91
- Cataphoresis, the value of, 781
- Caves, limestone, treatment of pulmonary complaints with air from, 865

- Cavities, to varnish the inside of, without touching the margins with the varnish, 451
- Celluloid table-cover, 292
- Central Dental Association of Northern New Jersey, 299
- Century, the second year of, 945
- Chaldeans, metallurgical skill of, and Babylonians, 865
- Character, professional honesty and decision of, in the practice of dentistry, 91
- Chicago Dental Society, 542
- Chittenden, Charles C., the legal status of the term "reputable" as applied to dental colleges, 581
- Chloroform, collapsed while extracting under, 952
- Clamps, piano wire, 228
- Cleft palate, surgical correction of malformation and speech defects, due to or associated with harelip or, 301
- Collapsed while extracting under chloroform, 952
- College course and professional training, 156
- Colleges, dental, the legal status of the term "reputable" as applied to, 581
- Collodion as a model varnish, 454
- Colorado State Board of Dental Examiners, 868
- Dental Association, 464, 619
- Committees, the two, 859
- Congress, Fifty-seventh, bills before the Senate, 455
- Connecticut State Dental Association, 296
- Conventions, the summer, 436
- Copper and antimony process for producing gold-like alloy from, 538
- Cork-forests, the great, of Spain, 863
- Cork, use of, between the teeth while malleting, 454
- Cottonoid strips with the rubber dam, 145
- Counter-die and die of Mellotte's metal, 617
- Criticism, a: professional education, 217
- putrescent pulps, 861
- Crockett, E. A., deaf mutes, 405
- Crown, an emergency, 291, 537
- bell-shaped, to be applied without trimming the tooth, 388
- the burnished-cap-, 545
- Crown-post, to bend, without strain on the crown, 388
- Crowns, gold, carved solid cusp for, 777
- CURRENT NEWS:
- Alumni Association, New York College of Dentistry, 297
- American Dental Society of Europe, 457, 543
- Society of Orthodontists, 300, 778
- Bill to add dental surgeons to the navy, 147
- Bills before the Senate, Fifty-seventh Congress, 455
- Board of Dental Examiners in Pennsylvania, 296, 868
- Chicago Dental Society, 542
- Colorado State Board of Dental Examiners, 868
- Dental Association, 464
- Connecticut State Dental Association, 296
- G. V. Black Dental Club, 620
- Harvard Dental Alumni Association, 461, 619
- Odontological Society, 298
- Illinois State Dental Society, 541
- Institute of Dental Pedagogics, 298, 953
- Iowa State Dental Society, 299
- Maine Dental Society, 543
- Mississippi Board of Dental Examiners, 295, 392

CURRENT NEWS:

- Missouri State Dental Association, 300, 391, 542
- National Association of Dental Examiners, 460, 700 of Dental Faculties, 460, 541
 - Dental Association, 459, 540
- New England Association of Dental Examiners, 460
- New Jersey State Board of Dental Examiners, 779
 - State Board of Registration and Examination in Dentistry, 296
 - State Dental Society, 146, 458
 - State Dental Society Meeting, 463
- New York Odontological Society, 67
- North Carolina State Board of Dental Examiners, 459
- Northeastern Dental Association, 779
- Northern Illinois Dental Society, 66
 - Ohio Dental Association, 461
- Odontological Society of Chicago, 146
- Pennsylvania Association of Dental Surgeons, 68, 954
 - Board of Dental Examiners, 392
 - State Dental Society, 461, 541
- Reading Dental Society, 297
- Seventh District Dental Society of the State of New York, 297
- Southern Branch National Dental Association, 67, 148
- Tennessee Dental Association, 462, 780

CURRENT NEWS:

- Texas State Dental Association, 300, 620
 - Union Meeting of the Seventh and Eighth District Dental Societies of New York, 780
 - Virginia State Dental Association, 544
 - Currents, electrical, local anæsthesia by high-frequency, 698
 - high-frequency, anæsthesia of the teeth by means of, 651
 - Curricula, dental college, as related to physical diagnosis, 565
 - Curtis, G. Lenox, electric ozonation in neuralgia, 635
 - Cusp, carved solid, for gold crowns, 777
- D.
- Davenport, S. E., stray thoughts about regulating, 736
 - Decay, notes on methods of preventing, 888
 - Degree, a new, needed, 614
 - Degrees, conferring honorary, 381
 - De Lisle, Justin, some popular errors about microbes, 469
 - Dental education, Dr. Guillermin's communication on, 132
 - surgeons, a bill to add a corps of, to the bureau of medicine and surgery of the navy, 456
 - a bill to reorganize the corps of, attached to the medical department of the army, 456
 - Dentine, carious, histological and clinical investigations as to the method in which nitrate of silver affects, 331
 - obtunding sensitive, by the use of nitrate of silver, 426
 - the present state of our knowledge in regard to the sensitiveness of, and its treatment, 492

Dentine, the reticulum in, 900
 Dentist, the modern, from a medical stand-point, 646
 Dentistry, a plea for a sub-specialty in, 235
 as a vocation for profit especially in North Carolina, 239
 extract of the suprarenal gland in, 905
 professional honesty and decision of character in the practice of, 91
 Dentists, appointment of, in New York hospitals, 450
 Details, importance of, 893
 Diagnosing, the use of heat as a means of, the presence of pus, 294
 Diagnosis of presence of pus by heat, 699
 physical, as related to college curricula, 565
 Die and counter-die of Mellotte's metal, 617
 Dioxigen, instructions for concentrating, 777
 DISCUSSIONS:
 A brief address, 911
 A comparative study of the attachment of the teeth, 917
 A contribution to operative orthodontia, 602
 A peculiar case of dental resorption, 763
 Adenoids in relation to structural changes, 421
 Among the Hondurians, ancient and modern, 360
 Amputation of the palatal roots of superior first molars for the prevention of antral abscesses, 821
 Capsule implantation, 373
 Deaf mutes, 429
 Dental education, 205
 Electric ozonation in neuralgia, 921
 Evolution of the pulp, 846

DISCUSSIONS:
 Extension for prevention, 345
 Facial and dental harmony, 114
 Faulty environment, 33
 Good of the order, 370
 Importance of details, 908
 Incidents of office practice, 668
 Kirk's, E. C., remarks on Dr. Michael's work, 246
 Notes on methods of preventing decay, 913
 Observations on some recent cases of orthodontia, 918
 Oral hygiene, 925
 Physical diagnosis as related to dental college curricula, 677
 Physiological results of operation for cleft palate, 600
 Porcelain inlays, 659
 President's address, 941
 Preventive dentistry, 175
 Résumé of the histology of the dental pulp, 840
 Science as a teacher of prophylaxis, 104
 Some notes concerning preparation of teeth for microscopic study, 769
 Some peculiar cases of dental resorption, 508
 Some popular errors about microbes, 502
 Some things I have found useful in the practice of dentistry, 516
 Stomatitis from a dental stand-point, 927
 Stray thoughts about regulating, 754
 Surgical correction of malformation and speech defects due to or associated with harelip and cleft palate, 354
 The burnished-cap-crown, 590
 The college course and professional training, 190
 The control of our patients, 41

DISCUSSIONS:

- The hospitals need of a dental staff, 803
- The modern dentist from a medical stand-point, 922
- The value of cataphoresis, 833
- To restore the cutting or grinding surfaces of abraded teeth with gold, 501
- What should be the relation of our government to the dental profession, 172
- Disease, flies as carriers of, 864
- Disinfection of dental instruments by spirits of soap, 169

DOMESTIC CORRESPONDENCE:

- Appointments of dentists in New York hospitals, 450
- Banquet in honor of Dr. S. B. Palmer, of Syracuse. N. Y., 950
- Boston letter, 693, 949
- Incident of office practice, 143
- Letter from New York City, 116, 287, 386, 447
- Nitrogen monoxide in combination with oxygen for anaesthesia, 387
- Piano wire clamps, 228
- Putrescent pulps: a criticism, 861
- Some popular errors about microbes, 386
- Who first filled pulp-canals? 536

E.

- Eames, George F., oral hygiene, 881

EDITORIAL:

- A new degree needed, 614
- A sub-specialty for women, 272
- American Medical Association, Section on Stomatology, 385
- Society of Orthodontists, 858
- Award of the Gross prize of one thousand dollars, 222

EDITORIAL:

- Biographical sketches, 438
- Conferring honorary degrees, 381
- Death of Dr. H. B. Noble, 276
- Dr. A. W. Harlan retires, 223
- Dr. Benjamin Lord, 440
- Dr. R. W. Morgan retired, 59
- Explanation and apology, 949
- From trade ideas to professional ideals, 135
- International Dental Congress, 946
- Is spelling an important factor in examination? 56
- Newspaper enterprise, 948
- Organizations, present and future, 773
- Professional education: a criticism, 217
- recreation, 611
- Professor Willoughby D. Miller, 528
- The army dentist, 221
- The Massachusetts Dental Society, annual meeting, 525
- The multiplication of dental associations, 854
- The National Association of Dental Faculties, 691
- Dental Association, 689
- The Regents of New York and the D.D.S. degree, 521
- The second year of the century, 945
- The summer convention, 436
- The two committees, 859
- The vicissitudes of dental journalism, 853
- What is the true standard of mental training? 54
- Where an explanation seems necessary, 136
- Education, dental, discussions on, 205
- Professor Billeter's report on, 134

Education, dental, report by Professor Métral on, 135
 report on, 125, 206
 professional: a criticism, 217
 Eighth District Dental Societies of New York, Union Meeting of the Seventh and, 780
 Embryology, the, of the dental pulp, 621
 Engs, John S., the reticulum in dentine, 900
 Enterprise, newspaper, 948
 Environment, faulty, 1
 Erosion, the use, of a compound of milk of magnesia and precipitated chalk for, 426
 Errors, some popular, about microbes, 469
 Essig, Charles J., obituary, 61
 Eucalypto-percha, a method of making, 618
 Evolution of the pulp, Eugene S. Talbot, 846
 Examination, is spelling an important factor in an? 56
 Explanation, where an, seems necessary, 136
 Expressions, inconsistent and misleading, 490
 Extension for prevention, 311

F.

Facings, an original method of adapting backings to, 698
 Fakirs, exposing, burlesque advertising as a means of, 617
 Fillebrown, Thomas, physiological results of operation for cleft palate, 557
 Fillings, making approximal amalgam, 332
 Flanagan, A. J., the hospital's need of a dental staff, 796
 true professional life a fine art, 250
 Flies as carriers of disease, 864

"Fox and Harris," a few extracts from, in contrast, 21
 Fuller, D. A., a brief address

G.

Genese, D., stomatitis from a dental stand-point, 644
 Gerrish, Chas. H., good of the order, 367
 G. V. Black Dental Club, 620
 Ginger as a remedy, 295
 Gold fillings in the Mosaic period, 453
 Good of the order, 367
 Gordon, George Byron, among the Honduranians, 321
 Grant, Harry L., which shall it be, M.D., or A.B.? 485
 Gross prize of one thousand dollars, award of the, 222
 Guillermin's communication on dental education, 132

H.

Hands, to remove the odor of iodiform from, 863
 Harelip, surgical correction of malformation and speech defects due to or associated with, or cleft palate, 301
 Harlan, A. W., retires, 223
 Harmony, facial and dental, 69
 Harvard Dental Alumni Association, 40, 461, 619
 Odontological Society, 114, 278, 429, 515
 Health, general, the dental profession in relation to, 402
 Heat, diagnosis of presence of pus by, 699
 the use of, as a means of diagnosing the presence of pus, 294
 Helps to success in practice, 11
 Histology, résumé of the, of the dental pulp, 719

Honduranians, ancient and modern, among the, 321
 Honesty, professional, and decision of character in the practice of dentistry, 91
 Hopkins, Samuel A., science as a teacher of prophylaxis, 80
 Hospitals, general, a note on the appointment of dental surgeons to, 794
 New York, appointment of dentists in, 450
 Howard, W. R., an unusual operation, 9
 Howe, J. Morgan, notes on methods of preventing decay, 888
 Hudson, Edward, biographical sketch, 441
 Hydrogen dioxide for powder-stains, 451
 Hygiene, oral, 881
 Hypodermic needle, to prevent pain when inserting the, 293

I.

Ideals, professional, from trade ideas to, 135
 Ideas, from trade, to professional ideals, 135
 Illinois State Dental Society, 541
 Impression material, a new, 454
 Inglis, Charles S., resolutions of respect to, 227
 Otto E., some peculiar cases of dental resorption, 479
 Inlays, an improved method of making the matrix for irregular-shaped porcelain, 419
 gold, 867
 porcelain, 630
 vulcanite, 867
 Inoculations, antityphoid, results obtained by, 867
 Institute of Dental Pedagogics, 298, 953.
 Instruments, dental, disinfection of, by spirits of soap, 169

International Commission of Education, 205
 Dental Congress, 946
 Federation, 123, 205
 and International Commission of Education, 848
 meetings of Executive Council, Subcommittee, and International Commission of Education, 43
 Iodoform, to remove the odor of, from the hands, 863
 Iowa State Dental Society, 299

J.

Jack, Louis, a peculiar case of resorption, 633
 the value of cataphoresis, 781
 Jackson, Harvey N., the value of the Wenker rubber jaw in teaching therapeutics, 562
 Japanese grass-line, separation of teeth with, 39
 Jaws and teeth, general nervous manifestations in relation to, 571
 Jenkins, N. S., the future of porcelain work, 903
 Journalism, dental, vicissitudes of, 853

K.

Kelley, Henry A., the control of our patients, 26
 Kirk, Edward C., some account of the work of Dr. Michaels, 229
 Knight, William, the modern dentist from a medical stand-point, 646

L.

Latham, V. A., résumé of the histology of the dental pulp, 719
 Lett, Isidore, amputation of the palatal roots of superior first molars for the prevention of antral abscesses, 784

Lewis, F. Park, adenoids in relation to structural changes, 393
 Life, true professional, a fine art, 250
 Linton, Charles C., ventilation of a dental office, 413
 Liquid air, the action of, upon bacteria, 696
 Lord, Benjamin, 440
 biographical sketch, 531
 Lubricant, an oil-stone, 777

M.

McCullough, P. B., the burnished-cap-crown, 545
 Macleod, Alexander, the dental profession in relation to the general health, 402
 Macvane, S. M., the college course and professional training, 156
 Maine Dental Society, 543
 Malformation, surgical correction of, and speech defects due to or associated with harelip or cleft palate, 301
 Manifestations, general nervous, in relation to the jaws and teeth, 571
 Massachusetts Dental Society, 250, 367, 932
 annual meeting, 525
 Matrix, an improved method of making the, for irregular-shaped porcelain inlays, 419
 fastening a, with oxyphosphate, 453
 M.D. or A.B., which shall it be? 485
 Mellotte's metal, die and counter-die of, 617
 Membrana tympani, facial neuralgia due to a hair irritating the, 292
 Memoriam, in,—Z. T. Sailer, 66
 Metallurgical skill of Chaldeans and Babylonians, 865
 Métral's, Professor, report on dental education, 135
 Michaels, Dr., some account of the work of, 229
 work, E. C. Kirk's remarks on, 246
 Microbes, some popular errors about 386, 469
 Miller, Willoughby D., 528
 MISCELLANY:
 A method of making eucalyptopercha, 618
 A new impression material, 454
 method of closing superficial incised wounds, 389
 An emergency crown, 291, 537
 An oil-stone lubricant, 777
 An original method of adapting backings to facings, 698
 Arsenical poisoning cured by orthoform, 295, 617
 Bacteria on Mont Blanc, 696
 Bell-shaped crown to be applied without trimming the tooth, 388
 Burlesque advertising as a means of exposing fakirs, 617
 Care of the teeth, 451
 Carved solid cusp for gold crowns, 777
 Celluloid table-cover, 292
 Collapsed while extracting under chloroform, 952
 Collodion as a model varnish, 454
 Concealed gold bridge attachment, 144
 bicuspid attachment for bridge, 538
 Cottonoid strips with the rubber dam, 145
 Diagnosis of presence of pus by heat, 699
 Die and counter-die of Mellotte's metal, 617
 Facial neuralgia due to a hair irritating the membrana tympani, 292
 Fastening a matrix with oxyphosphate, 453

MISCELLANY:

- Flies as carriers of disease, 864
- Ginger as a remedy, 295
- Gold fillings in the Mosaic period, 453
 - inlays, 867
- Holding patients under the influence of nitrous oxide gas, 866
- How to splice engine bands, 618
- Hydrogen dioxide for powder stains, 451
- Instructions for concentrating dioxygen, 777
- Local anæsthesia by high-frequency electrical currents, 698
- Metallurgical skill of Chaldeans and Babylonians, 865
- Parr's fluxed wax, 295
- Percentage solutions, 539
- Pernicious anæmia caused by oral sepsis, 699
- Precipitated silver to hasten setting of amalgam, 291
- Process for producing gold-like alloy from copper and antimony, 538
- Results obtained by antityphoid inoculations, 867
- Soapstone, 145
- Suggestion in the administration of anæsthetics, 293
- Synthol, 293
- Test for adulterated zinc salts, 455
- The action of liquid air upon bacteria, 697
- The great cork-forests of Spain, 863
- The use of heat as a means of diagnosing the presence of pus, 294
- To bend a crown-post without strain on the crown, 388
- To prevent pain when inserting the hypodermic needle, 293

MISCELLANY:

- To prevent unsoldering, 145, 293
- To produce spring temper in Swiss broaches, 777
- To remove the odor of iodoform from the hands, 863
 - vulcanite from between teeth, 867
- To varnish the inside of cavities without touching the margins with the varnish, 451
- Treatment of pulmonary complaints with air from limestone caves, 865
- Use of beads in retaining rubber dam, 866
 - of cork between the teeth while malleting, 454
 - of preservatives for solutions of suprarenal extract, 452
- Vulcanite inlays, 867
- Mississippi Board of Dental Examiners, 295, 392
- Missouri State Dental Association, 300, 391, 542
- Models, the making of, which are durable, and which can be painted, 31
- Molars, superior first, amputation of the palatal roots of, for the prevention of antral abscesses, 784
- Mont Blanc, bacteria on, 696
- Morgan, R. W., retired, 59
 - W. H., resolutions of respect to—Tennessee Dental Association, 65
- Mutes, deaf, 405

N.

- National Association of Dental Examiners, 460, 700
- Faculties, 460, 541, 691

- National Dental Association, 540
 of the United States,
 and the British Den-
 tal Association con-
 trasted, 745
 Southern Branch, 148
- Navy, a bill to add a corps of den-
 tal surgeons to the bureau of
 medicine and surgery of, 456
 bill to add dental surgeons to
 the, 147
- Necrosis, a case of arsenical, 790
- Neuralgia, electric ozonation in,
 635
 facial, due to a hair irritating
 the membrana tympani, 292
- New England Association of Dental
 Examiners, 460
- New Jersey State Board of Dental
 Examiners, 779
 State Board of Registra-
 tion and Examination in
 Dentistry, 296
 State Dental Society, 146,
 458
 State Dental Society, Meet-
 ing of, 463
- Newkirk, Garrett, review of E. S.
 Talbot's paper, "A study of the
 degeneracy of the jaws of the
 human race," 332
- New York Institute of Stomatology,
 The, 99, 172, 332, 421,
 501, 749, 802, 907
 Odontological Society, 67
- Nitrate of silver and eucaine for
 obtunding sensitive den-
 tine, 426
 histological and clinical in-
 vestigations as to the
 method in which, affects
 carious dentine, 331
- Nitrogen monoxide in combination
 with oxygen for anæsthesia, 387
- Nitrous oxide gas, holding patients
 under the influence of, 866
- Noble, Henry Bliss, death of, 276
 obituary of, 282
- North Carolina State Board of Den-
 tal Examiners, 459
- Northeastern Dental Association,
 779
- Northern Illinois Dental Society,
 66
- Ohio Dental Association, 461
- Notes, dental, 893
- Noyes, Frederick B., a comparative
 study of the attachment of the
 teeth, 639
- O.
- OBITUARY:
- Essig, Charles J., M.D., D.D.S.,
 61
- In memoriam, Dr. Burt Barry,
 282
- Noble, Henry Bliss, 282
- Resolutions of respect to Dr.
 Charles S. Inglis, 227
- Tennessee Dental Association—
 resolutions of respect to Dr.
 W. H. Morgan, 65
- Wetherbee, Dr. Isaac J., 695
- Observations, foreign, 15
 on some recent cases of ortho-
 dontia, 869
- Odontological Society of Chicago,
 146
- Operation, an unusual, 91
- Organizations, present and future,
 773
- ORIGINAL COMMUNICATIONS:
- A case of arsenical necrosis,
 790
- A comparative study of the at-
 tachment of the teeth, 639
- A contribution to operative
 orthodontia, 553
- A few extracts from "Fox and
 Harris" in contrast, 21
- A note on the appointment of
 dental surgeons to general
 hospitals, 794
- A peculiar case of resorption,
 633
- A plea for a sub-specialty in
 dentistry. 235

ORIGINAL COMMUNICATIONS:

- Adenoids in relation to structural changes, 393
- Among the Hondurians, ancient and modern, 321
- Amputation of the palatal roots of superior first molars for the prevention of antral abscesses, 784
- An unusual operation, 9
- Deaf mutes, 405
- Dental notes, 893
- Dentistry as a vocation for profit, especially in North Carolina, 239
- Electric ozonation in neuralgia, 635
- Evolution of the pulp, 701
- Extension for prevention, 311
- Facial and dental harmony, 69
- Faulty environment, 1
- Foreign observations, 15
- General nervous manifestations in relation to the jaws and teeth, 571
- Helps to success in practice, 11
- Importance of details, 893
- Inconsistent and misleading expressions, 490
- Notes on methods of preventing decay, 888
- Observations on some recent cases of orthodontia, 869
- Oral hygiene, 881
- Physical diagnosis as related to dental college curricula, 565
- Physiological results of operation for cleft palate, 557
- Porcelain inlays, 630
- Professional honesty and decision of character in the practice of dentistry, 91
- Résumé of the histology of the dental pulp, 719
- Science as a teacher of prophylaxis, 80
- Some account of the work of Dr. Michaels, 229

ORIGINAL COMMUNICATIONS:

- Some notes concerning preparation of teeth for microscopic study, 588
- Some peculiar cases of dental resorption, 479
- Some popular errors about microbes, 469
- Some things I have found useful in practice, 465
- Stomatitis from a dental standpoint, 644
- Stray thoughts about regulating, 736
- Surgical correction of malformation and speech defects due to, or associated with, harelip or cleft palate, 301
- The British Dental Association and the National Dental Association of the United States contrasted, 745
- The burnished-cap-crown, 545
- The college course and professional training, 156
- The coming physiology: a prediction, 897
- The control of our patients, 26
- The dental profession in relation to the general health, 402
- The embryology of the dental pulp, 621
- The future of porcelain work, 903
- The hospital's need of a dental staff, 796
- The legal status of the term "reputable" as applied to tal colleges, 581
- The modern dentist from a medical stand-point, 646
- The reticulum in dentine, 900
- The value of cataphoresis, 781
- of the Wenker rubber jaw as an aid in teaching therapeutics, 562

ORIGINAL COMMUNICATIONS:

- To restore the cutting or grinding surfaces of abraded teeth with gold, 483
- Ventilation of a dental office, 413
- What should be the relation of our government to the dental profession? 149
- Which shall it be, M.D. or A.B.? 485
- Orthodontia, operative, a contribution to, 553
 - observations on some recent cases of, 869
- Orthoform, arsenical poisoning cured by, 295, 617
- Oxyphosphate, fastening a matrix with, 453
- Ozonation, electric, in neuralgia, 635

P.

- Pain, to prevent, when inserting the hypodermic needle, 293
- Palate, cleft, physiological results of operation for, 557
- Palmer, S. B., the coming physiology: a prediction, 897
 - banquet in honor of, 950
- Parmelee, Geo. L., helps to success in practice, 11
- Patients, holding, under the influence of nitrous oxide gas, 866
 - the control of our, 26
- Peck, A. H., physical diagnosis as related to dental college curricula, 565
- Pennsylvania Association of Dental Surgeons, 68, 954
 - Board of Dental Examiners, 391
 - State Dental Society, 461, 541
- Physiology, the coming: a prediction, 897
- Piano wire clamps, 228
- Pin of Logan crown crystallized, 358
- Plates, dental, aluminum for, 801
- Poisoning, arsenical, cured by orthoform, 617
- Porcelain, the practical value of, as a filling material, 243
 - work, the future of, 903
- Port, G., the making of models which are durable, and which can be painted, 31
- Powder-stains, hydrogen dioxide for, 451
- Power, James Edward, a case of arsenical necrosis, 790
- Practice, helps to success in, 11
 - office, incident of, 143
 - some things I have found useful in, 465
- Prediction, a: the coming physiology, 847
- Prevention, extension for, 311
- Profession, dental, what should be the relation of our government to the? 149
 - the dental, in relation to the general health, 402
- Professional education: a criticism, 217
 - training, the college course and, 156
- Prophylaxis, science as a teacher of, 80
- Pulmonary complaints, treatment of, with air from lime-stone caves, 865
- Pulp-canals, who first filled? 536
- Pulp, dental, résumé of the history of the, 719
 - the embryology of the, 621
 - evolutions of, 701
- Pulps, putrescent: a criticism, 861
- Pus, diagnosis of presence of, by heat, 699
 - the use of heat as a means of diagnosing the presence of, 294
- Pyorrhœa alveolaris, progress report, 494

R.

Reading Dental Society, 277
 Regents, the, of New York and the
 D.D.S. degree, 521
 Regulating, stray thoughts about,
 736

Remedy, ginger as, 295

REPORTS OF SOCIETY MEETINGS:

Academy of Stomatology, 245,
 508, 590, 668, 763, 833, 927

Address, annual, New Jersey
 State Dental Society, 685

American Academy of Dental
 Science, 33, 187, 358, 596,
 653, 821

Medical Association, Sec-
 tion on Stomatology,
 354, 608, 677, 763, 840

Harvard Dental Alumni Asso-
 ciation, 40

Odontological Society, 114,
 429, 515

International Commission of
 Education, 205

Dental Federation, 123,
 205

Dental Federation and In-
 ternational Commission
 of Education, 848

Dental Federation: Meet-
 ings of Executive Coun-
 cil, Subcommittee, and
 International Commis-
 sion of Education, 43

Massachusetts Dental Society,
 250, 367, 932

New Jersey State Dental So-
 ciety, 684

Practice, incidents of, 513, 653

The New York Institute of
 Stomatology, 99, 172, 332,
 421, 501, 749, 802, 907

Theory and practice, communi-
 cations on, 100, 332, 426, 750,
 907

"Reputable," the legal status of the
 term, as applied to dental col-
 leges, 581

Resolutions of respect to Dr. W. H.
 Morgan—Tennessee Dental Asso-
 ciation, 65

Resorption, a peculiar case of, 633
 dental, some peculiar cases of,
 479

Results, physiological, of operation
 for cleft palate, 557

Reticulum, the, in dentine, 900

Review, a short, of E. S. Talbot's
 paper, "A study of the degen-
 eracy of jaws of the human race,"
 332

REVIEWS OF DENTAL LITERATURE:

Actinomycosis, 169

Aluminum for dental plates,
 80

Anæsthesia of the teeth by
 means of high-frequency cur-
 rents, 651

An improved method of making
 the matrix for irregular-
 shaped porcelain inlays, 419

Extract of the suprarenal gland
 in dentistry, 905

Histological and clinical inves-
 tigation as to the method in
 which nitrate of silver affects
 carious dentine, 331

Pyorrhœa alveolaris, progress
 report, 494

Somnoform, a new anæsthetic,
 747

The disinfection of dental in-
 struments by spirits of soap,
 169

The making of models which
 are durable, and which can
 be painted, 31

The practical value of porcelain
 as a filling-material, 243

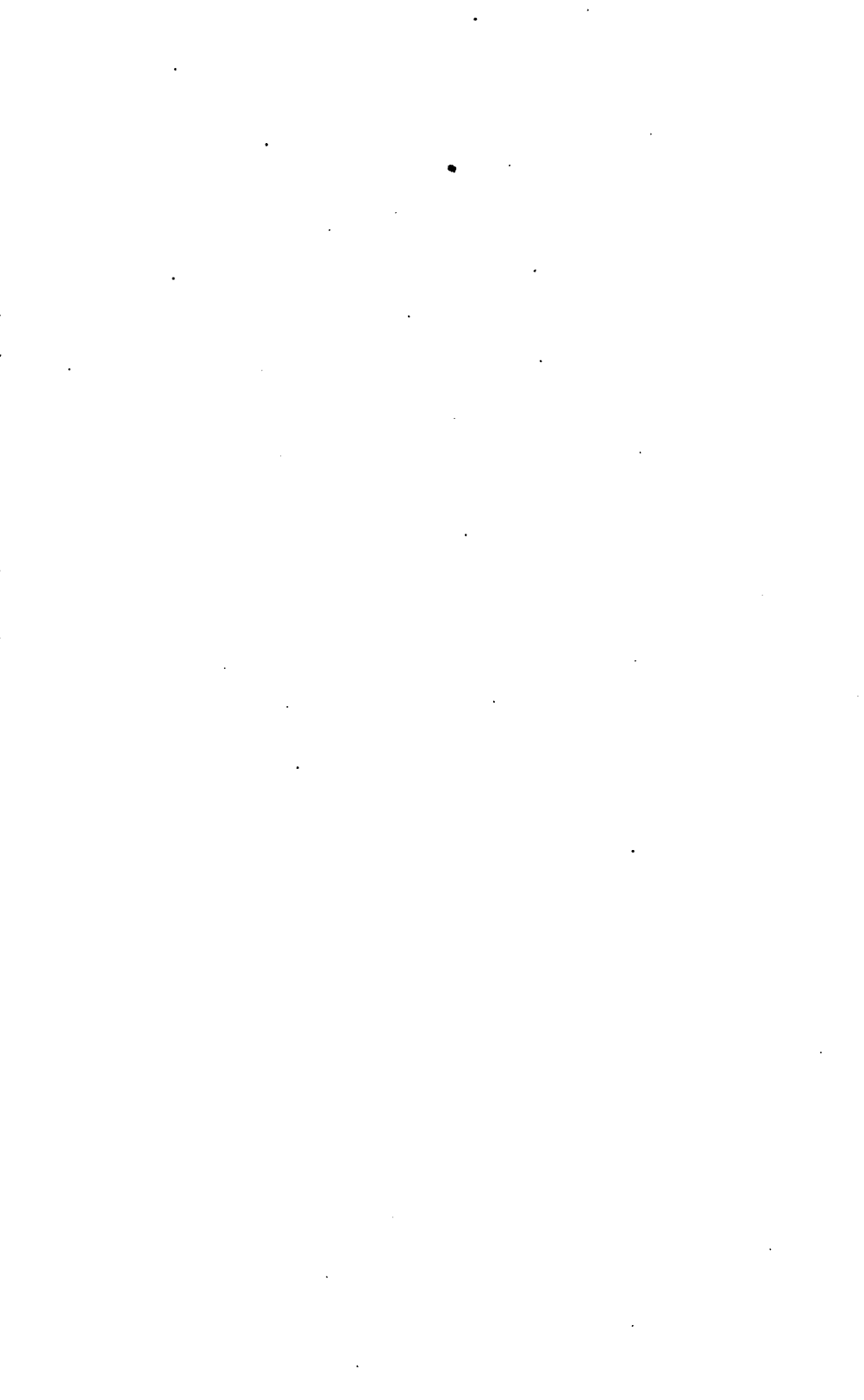
The present state of our knowl-
 edge in regard to the sensa-
 tiveness of dentine and its
 treatment, 492

The use of suprarenal in dental
 cases, 413

Rollins, William, dental notes, 893

- Roots, amputation of the palatal, of superior first molars for prevention of antral abscesses, 784
- Rubber dam, cottonoid strips with, 145
use of beads in retaining, 866
- S.
- Sailer, Z. T., in memoriam, 66
- Science as a teacher of prophylaxis, 80
- Sepsis, oral, pernicious anæmia caused by, 699
- Seventh and Eighth District Dental Societies of New York, Union Meeting of, 780
District Dental Society of the State of New York, 297
- Silver, precipitated, to hasten the setting of amalgam, 291
- Sketches, biographical, 438
- Smith, Eugene H., a contribution to operative orthodontia, 553
F. Milton, to restore the cutting or grinding surfaces of abraded teeth with gold, 483
- Soap, spirits of, disinfection of dental instruments by, 169
- Soapstone, 145
- Solutions, percentage, 539
- Somnoform, a new anæsthetic, 747
- Southern Branch National Dental Association, 67
- Speech defects, surgical correction of malformation and, due to or associated with harelip and cleft palate, 301
- Spelling, is, an important factor in examination? 56
- Spencer, H. C., a few extracts from "Fox and Harris" in contrast, 21
- Staff, dental, the hospital's need of a, 796
- Status, the legal, of the term "reputable," as applied to dental colleges, 581
- Stoddard, A. H., some things I have found useful in practice, 465
- Stomatitis from a dental standpoint, 644
- Study, a comparative, of the attachment of the teeth, 635
- Sub-specialty for women, a, 272
in dentistry, a plea for a, 235
- Suprarenal extract, use of preservatives for solutions of, 452
in dentistry, 905
the use of, in dental cases, 413
- Surgeons, dental, a note on the appointment of, to general hospitals, 794
bill to add, to the navy, 147
- Synthol, 293
- T.
- Table-cover, celluloid, 292
- Talbot, Eugene S., evolutions of the pulp, 701
- Teeth, abraded, to restore the cutting or grinding surfaces of, with gold, 483
a comparative study of the attachment of, 639
anæsthesia of, by means of high-frequency currents, 651
and jaws, general nervous manifestations in relation to, 571
the care of the, 451
separation of, with Japanese grass-line, 39
some notes concerning preparation of, for microscopic study, 588
to remove vulcanite from between, 867
use of cork between, while mal-
leting, 454
- Temper, to produce spring, in Swiss broaches, 777
- Tennessee Dental Association, 462, 780

- Tennessee Dental Association—resolutions of respect to Dr. W. H. Morgan, 65
- Test for adulterated zinc salts, 453
- Texas State Dental Association, 300, 620
- The hospital's need of a dental staff, 796
- The New York Institute of Stomatology, 99, 172, 332, 421, 501, 749, 802, 907
- Theory and practice, communications on, 100, 332, 426, 750, 907
- Therapeutics, the value of the Wenker rubber jaw as an aid in teaching, 562
- Training, mental, what is the true standard of? 54
- Trueman, William H., the British Dental Association and the National Dental Association of the United States contrasted, 745
- U.**
- Union Meeting of the Seventh and Eighth District Dental Societies of New York, 780
- Unsoldering, to prevent. 145, 293
- V.**
- Varney, Royal William, 284
- Varnish, collodion as a model, 454
- Ventilation of a dental office, 413
- Virginia State Dental Association, 544
- Vulcanite, to remove, from between teeth, 867
- W.**
- Wax, Parr's fluxed, 295
- Wedelstaedt, E. K., faulty environment, 1
- Weiser and Zsigmondy's report on dental education, 206
- Wenker rubber jaw, the value of, as an aid in teaching therapeutics, 562
- Wetherbee, Isaac J., obituary, 695
- Whitlock, W. M., importance of details, 893
- Williams, E. Lloyd, a note on the appointment of general surgeons to general hospitals, 794
- Women, a sub-specialty for, 272
- Wounds, a new method of closing superficial incised, 389
- Wright, C. M., a plea for a sub-specialty in dentistry, 235
- X.**
- X-ray, value of, in diagnosis, 387
- Z.**
- Zinc salts, test for adulterated, 455
- Zsigmondy and Weiser's report on dental education, 206





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